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Industrial Development In Tennessee: Present Status and Suggested Program

BY
Paul Barnett

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Industrial Development In Tennessee: Present Status and Suggested Program

By

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STUDY No. 11 OF THE BUREAU OF RESEARCH
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CONCLUSIONS AND PROPOSALS

It is the purpose of this study (1) to focus attention upon the need for a stronger integrated and more effective long-range state-wide program for industrial development in Tennessee, (2) to point out some of the broad fields of activity in which such a program could be effective in increasing the rate of industrial development in desirable directions in the state, and (3) to outline briefly the structure and functions of a state-wide organization for formulating and carrying out a program of industrial development.

I

THE NEED FOR AN INDUSTRIAL DEVELOPMENT PROGRAM

The need for a more effective program than now exists to develop industries in Tennessee is strongly supported by certain definite conclusions from this study.

1. Tennessee is below the average for the nation as a whole when value added by manufacture is placed on either a per capita or per area basis.
2. Approximately 75 per cent of all manufacturing in Tennessee is concentrated in seven counties (Davidson, Shelby, Hamilton, Knox, Sullivan, Carter, and Blount) while 65 of the 95 counties in the state have practically no manufacturing.
3. The more rapid rate of growth of manufacturing in Tennessee than in the United States and the South as a whole from 1923 to 1939 has been due almost entirely to the location and growth of five or six large plants (chemicals, textiles and aluminum) which might have located in competing states.
4. The extremely low per capita income in Tennessee, which is only 50 to 55 per cent as large as the average for the United States, is due in part to the lack of industrial development. In states, like Tennessee, where a large proportion of the gainfully employed are engaged in the production of raw materials such as agricultural, mineral, and forest products, per capita income is low, whereas in states which transform raw materials into finished products, per capita income is high.
5. Due to lack of industry to provide equal economic opportunities a steady stream of workers is leaving Tennessee for

states which offer higher incomes. This net movement of productive workers involves a fairly large transfer of wealth from Tennessee. Not only is Tennessee producing and shipping out raw materials to be processed in other areas but is also sending a large number of workers to do the processing.

6. The relative rate of industrial growth in Tennessee in the future is likely to be less rapid than in the recent past because of the increased competition from those states which have set up aggressive coordinated programs for industrial development.

II

PROPOSALS FOR AN INDUSTRIAL DEVELOPMENT PROGRAM

1. An industrial development program should include the following broad fields of activity.

- a. Research and fact finding:

In order to convince industrialists that Tennessee is the logical place to locate their plant a research and fact finding program is necessary to provide accurate and detailed information on material and labor resources, existing industries, taxes, and industrial regulations.

- b. The statement of fundamental objectives and basic industrial policies:

It is doubtful if any industrial development program can go very far without a clear statement of objectives and a clear formulation of policies calculated to achieve those objectives.

- c. An informational program aimed at improving the intangible locational factors:

A sound industrial development program should provide for information aimed at raising the level of understanding of local industrial development problems, principles and techniques, and at developing and enlisting a high quality of local leadership.

- d. Advertising and promotional selling:

An adequate program for industrial development requires (1) the creation of some central agency to serve as a clearing house of information on industry, resources and industrial possibilities, (2) a carefully planned and ade-

- quately financed advertising campaign, and (3) arrangements for contacting and selling prospective industrialists on a Tennessee location.
2. The following organization is suggested for carrying out an industrial development program embodying these four activities.
 - a. An adequately financed Industrial Development Division in the Department of Conservation should be created. This Division should be definitely charged with the specific task of promoting industrial growth in the state. It should co-operate with the other agencies in the state in carrying out its work, and should receive advice and assistance from the Industrial Development Council and Technical Commission named below.
 - b. An Industrial Development Council of 12 to 15 businessmen, civic leaders, and officials of cooperating agencies should be created. The Council should formulate general policies and pass judgments on the broad outlines of the industrial development program and in addition should aid the Industrial Development Division in securing cooperation of the necessary agencies to carry out a coordinated program.
 - c. A Technical Commission of 8 to 12 persons should be appointed from those now working on various problems of industrial development in the cooperating agencies. This Commission should assist the Industrial Development Division by giving advice on and help in the direction of the more technical parts of the state-wide program.



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CHAPTER I

INTRODUCTION

In view of the unutilized natural and human resources in the state for the development of industry and in view of the programs for industrial development in operation in competing states, it is important that Tennessee face squarely the question of what can be done, within the limits of returnable costs, to speed up the rate of industrial development in the state. The disturbing fact is that there is no unified and co-ordinated long-range program for industrial development in Tennessee. Instead, there are several state and public agencies, private groups and individual concerns working more or less independently, and in some cases competitively, on different problems of commercial and industrial development. Under the present program, Tennessee is at a distinct disadvantage in competition for new industries with those states which, having approximately equal industrial resources, have effectively co-ordinated and strongly financed industrial development programs.

It is currently a matter of public concern that in the first few months of the national defense program Tennessee has not received defense contracts for existing plants or contracts for the construction of new plants in proportion either to its population or to the amount of manufacturing in the state. This problem was clearly laid before a group of approximately 300 representatives of commerce and industry in Nashville, April 18, 1941, by Governor Cooper, who received enthusiastic approval to open a permanent office in Washington to obtain information about contracts to be let and to present relevant data on Tennessee plants and locations to the decision-making group. There are many factors which explain why Tennessee has not received its share of defense contracts, but it can hardly be doubted that the lack of a strong co-ordinated organization for the development of industry in the state is one of the important factors. The opening of a permanent contact office in Washington represents a distinct advance. It is a step in the right direction, but it is not adequate. For every decision to expand production or build new productive capacity which is made in Washington and which the Tennessee office there could possibly influence, other decisions which involve a greater dollar volume will be made by private industry over the next few years. Careful consideration should be given to setting up an organization and working out a program so that those who make the decisions concerning the location of additional plant capacity con-

structed by private industry shall have accurate and detailed information about available locations in Tennessee.

The formulation of a sound industrial development program can be made only after careful analysis of the available industrial resources, the present industrial structure, the trends of growth, and a knowledge of the work of the several independent agencies now concerned with industrial development in Tennessee. In order to work out such a program it is necessary to have more accurate and detailed information than is now available in systematic form on resources, industries, and potentialities in the state. The program in Tennessee should be formulated only after a careful study of similar organizations in other states.

Yet, despite the urgent need for accurate and detailed information, few facts are readily available about industrial development and industrial resources in Tennessee which are so essential for planning future development. Few persons within the state have any very accurate knowledge of what Tennessee can actually count in its list of industrial assets. Furthermore, there is little or no understanding of present objectives and certainly no clear cut agreement on industrial policies among interested persons and active agencies. Little is known about the scope and effectiveness of the work of the several agencies concerned with various aspects of industrial development in the state. A Conference on Commercial and Industrial Development of Tennessee and the South held in Knoxville in October, 1939, under the sponsorship of the School of Business Administration of The University of Tennessee was attended by approximately 150 persons. It was the opinion of a number of these persons that the first essential step in appraising the present program for industrial development in Tennessee and in formulating a new program should be a general over-all study of the problem of industrial development in the state as a whole. This same opinion was also expressed by a large number of the more than 100 industrial and commercial leaders, research workers, editors and other public-spirited citizens who were interviewed by the author in April and May of 1940. It is in the hope of partially fulfilling that need that this reconnaissance or explanatory study is presented.

This study is painted in broad strokes. Consequently, many interesting and important details are omitted, and in the opinion of some readers, perhaps, too many small parts of the picture are not painted. The purpose here is to present a panoramic view and broad suggestions rather than a comprehensive study complete in

all details. The justification for this approach, aside from the utter impossibility of doing anything else at this stage of our knowledge, is that, in an attempt to think through the problem of what practical things can be done to increase the rate of industrial development in desirable directions in Tennessee, it appears essential to look first at the forest as a whole rather than at individual trees. As work on the problem of industrial development progresses, the individual trees must be studied very carefully. In fact, the formulation of a program which will involve the careful study of these individual trees is one of the main arguments of this study. But in an attempt to appraise the present program and to think through the complicated problem of industrial development, it seems more important to look as carefully as possible at the picture as a whole rather than to examine minutely one small spot or some narrow field in which some one person or agency happens to work.

Consequently, the reader should understand that in this preliminary study it is not intended to offer definitive answers or final conclusions to the many perplexing but crucial questions involved in the formulation and successful execution of a program of industrial development in Tennessee. Much less ambitiously, this study simply aims to survey the field, to present a few of the basic facts, raise some of the more important issues, indicate a few of the problems on which additional study is essential, suggest some of the more important elements which should be included in an industrial development program, and suggest some types of organization for getting the job done which it is believed will be more effective than those which now exist.

More concretely, this study involves a discussion of the following major topics in this order:

1. The present size, rate of growth, industrial types, and geographical distribution of manufacturing in Tennessee
2. Some of the factors which indicate the need for a larger amount of manufacturing in the state
3. Brief analysis of the research and promotional activities in competitive states aimed at industrial development
4. An outline of the present work of the several organizations in Tennessee actively concerned with various aspects of industrial research and promotion and a statement of what some of the principal gaps in the present program are
5. A statement of some of the limitations of the effectiveness of a program for industrial development together with an out-

line of some of the broad fields in which a unified state program might prove effective

6. A list of some of the more important elements or parts which might be included in a state-wide program of industrial development
7. Suggested forms of organization for the execution af a state program of industrial development in the direction of common objectives and in accordance with state policy.

It is obviously not possible in a study of this length, nor is it possible at this stage of knowledge of the various subjects, to treat each of these topics exhaustively. This preliminary over-all study of some of the broad problems and fundamental issues is presented in the hope that by focusing attention upon some of the more conspicuous gaps in the present unintegrated program and by pointing out the need for more effective effort, action may be accelerated toward the formulation and execution of a state-wide industrial development program for Tennessee.

CHAPTER II

MANUFACTURING IN TENNESSEE, 1899-1939

As a basis for clear thinking about any program for industrial development for Tennessee as a whole, it is necessary to have the essential facts about the present amount, recent growth, composition, and geographical distribution of industry in the state. It is the purpose of this chapter to present very briefly the essential information about the development of manufacturing in Tennessee and to point out some of the more significant conclusions which are important in the consideration of an industrial development program for the state. This discussion is organized under the following main divisions:

1. The amount of manufacturing in Tennessee as compared with other states in 1939.
2. The rate of growth of manufacturing in Tennessee as compared with the rate of growth of manufacturing in the United States, 10 leading industrial states, and 13 southern states from 1899 to 1939.
3. The size and relative importance of the leading industries and industrial groups in Tennessee in 1937, the latest year for which the data are available.
4. The geographical distribution of manufacturing in Tennessee in 1939.
5. Conclusions which have implications for an industrial development program.

MAGNITUDE AND COMPARATIVE EXTENT OF MANUFACTURING IN TENNESSEE IN 1939¹

In 1939, according to the Biennial Census of Manufacturers, 2,289 manufacturing establishments in Tennessee, each producing

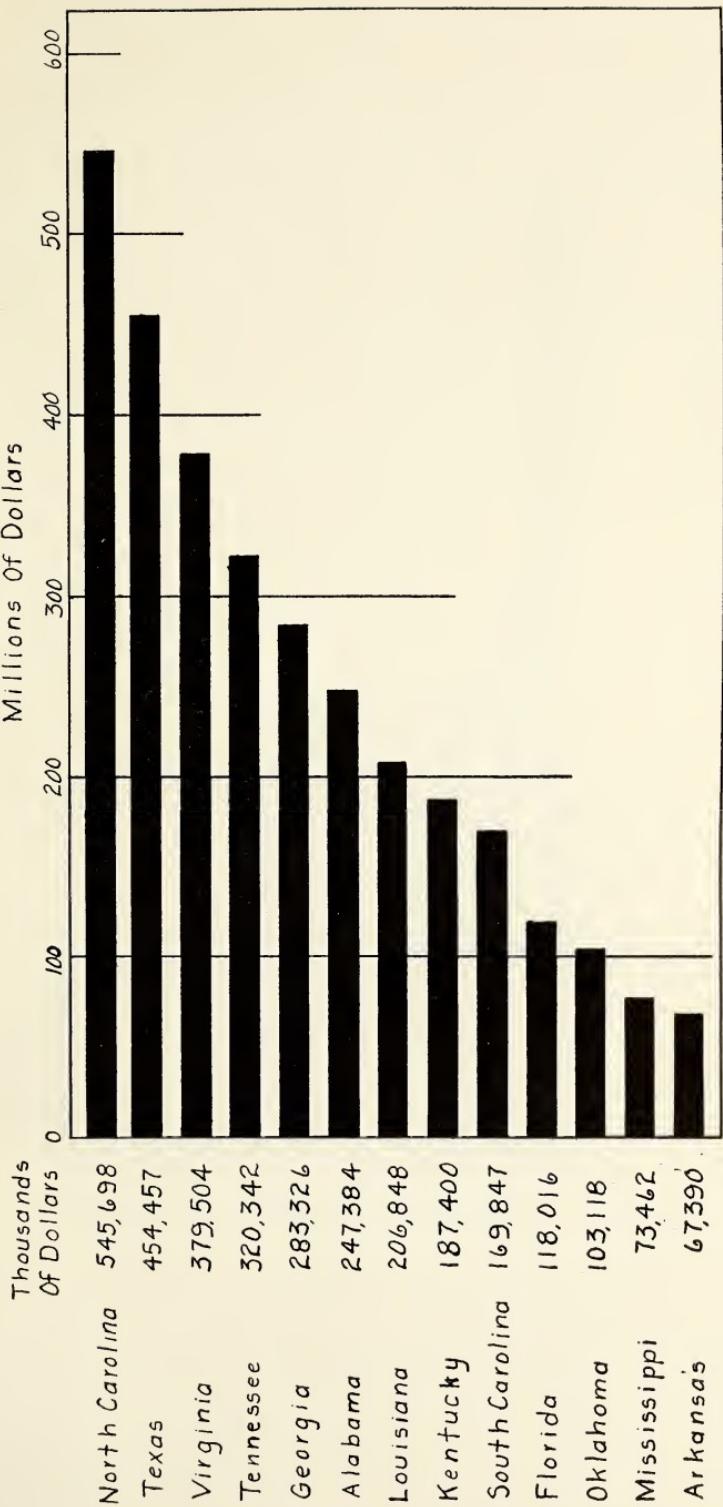
¹*Biennial Census of Manufacturers, 1937.* Certain terms here used require definition.

a. *Establishment:* The term "establishment" has been used rather consistently by the Census Bureau to mean a single plant or factory. In their language: "As a rule, the term 'establishment' signifies a single plant or factory. In some cases, however, it refers to two or more plants operated under common ownership and located in the same city, or in the same county but in different municipalities or unincorporated places having fewer than 10,000 inhabitants. On the other hand, separate reports are occasionally obtained for different lines of manufacturing carried on in the plant, in which even a single plant is counted as two or more establishments." Certain classes of establishments are excluded. "Beginning with the census of 1904, the following classes of establishments have been excluded:

goods valued at \$5,000 or more per year, employed an average of 131,874 wage earners; paid \$109,662,000 in wages; purchased materials, fuel, and energy which cost \$407,746,000; and turned out products valued at \$728,088,000. Deducting the cost of materials, fuel, and purchased energy from the value of product in 1939 shows a value added by manufacture of \$320,342,000. This figure is a

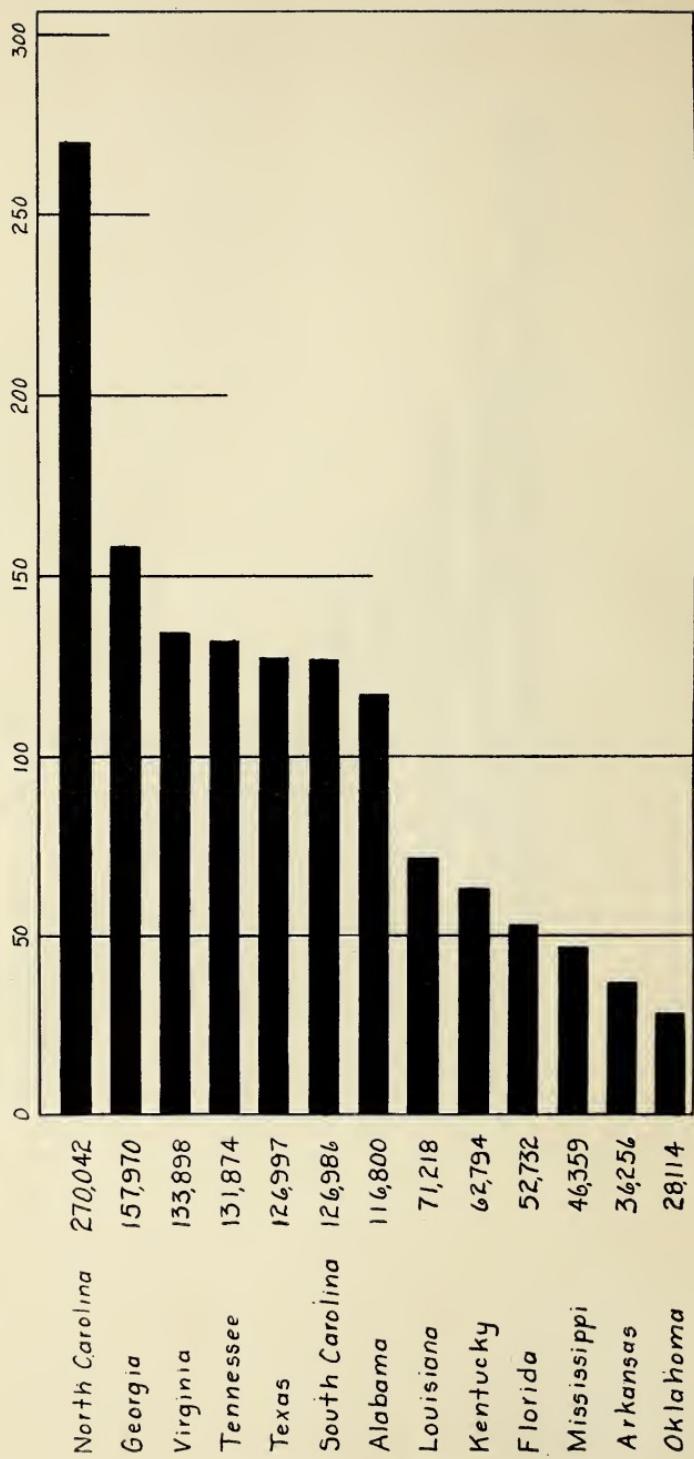
- (1) Establishments which were idle throughout the year or reported products valued at less than \$5000.
 - (2) Establishments engaged principally in the performance of work for individual customers, such as tailor shops, dress-making and millinery shops, and repair shops. (This does not apply to large establishments manufacturing to fill special orders.)
 - (3) Establishments in the building industries, other than those manufacturing building materials for the general trade.
 - (4) Establishments in the so-called neighborhood industries and hand trades, in which little power or no machinery is used, such as carpentry, blacksmithing, tinsmithing, etc.
 - (5) Cotton ginneries.
 - (6) Small grain mills (gristmills) engaged exclusively in custom grinding.
 - (7) Wholesale and retail stores which incidentally manufacture on a small scale, particularly where it is impossible to obtain separate data for the manufacturing and for the mercantile operations.
 - (8) Educational, eleemosynary, and penal institutions engaged in manufacturing. (Data for the production of binder twine in penal institutions and of brooms in institutions for the blind are, however, collected.)" *Biennial Census of Manufactures*, 1933, pp. 5-6.
- b. *Value added by manufacture* is defined by the Bureau of the Census as "the increment in value, as measured by the price of goods produced and materials processed. This measures the net addition to the value of commodities, and is almost free from the duplication that is a factor in the total value of products. It is calculated, in the cases of all industries, by subtracting the cost of materials, supplies, containers, fuel, purchased electric energy, and contract work from the value of products." *Biennial Census of Manufactures*, 1937, p. 11.
- c. *Value of products:* "The amounts under this heading are the selling values at the factory or plant, of all commodities produced (or for some industries, receipts for work done) during census year, whether sold, transferred to other plants, or in stock, and consequently, under normal conditions, the total value of products covers the cost of production (including overhead expenses) and profits. It also covers selling expenses except in cases where separate sales departments are operated, in which cases the values at which the products are turned over to the sales departments are reported." *Ibid.*, p. 8.
- d. *Wage earners:* "Wage earners are defined as all time and piece workers employed in the plant (including power plant and maintenance, shipping, warehousing, and other departments). Working foremen and gang straw bosses are treated as wage earners, but foremen whose duties are primarily supervisory are classed as supervisory employees." In general the figure reported in the Census of Manufactures is an average obtained by dividing by 12 the total of the 12 monthly reports of wage earners on the payrolls for "the week that ended nearest the 15th day of each month, if that was a normal week, or for some normal week in the month." *Ibid.*, p. 6.

CHART I
VALUE ADDED BY MANUFACTURE IN THIRTEEN
SOUTHERN STATES, 1939



Source: Biennial Census of Manufactures, 1939.

CHART 2
WAGE EARNERS IN MANUFACTURING, THIRTEEN
SOUTHERN STATES, 1939



Source: Biennial Census of Manufactures, 1939.

better measure of total manufacturing activity in the state than any of the other figures.

In the same year, 16 states reported more wage earners in manufacturing than did Tennessee; 16 states reported higher value added by manufacture; and 17 states produced manufactured products of greater total value. Most of these states were north of the Ohio River and east of the Mississippi River.¹

As shown by Chart 1, on the basis of value added by manufacture, only three southern states ranked ahead of Tennessee; as shown by Chart 2, only three states ranked ahead on the basis of the average number of wage earners in manufacturing. In 1939, North Carolina reported 104.8 per cent more wage earners in manufacturing than Tennessee, Georgia reported 19.8 per cent more, and Virginia reported 1.5 per cent more. North Carolina reported 70.3 per cent more value added by manufacture than Tennessee, Texas reported 41.9 per cent more, and Virginia 18.5 per cent more. The other southern states reported less. Since land area and population differ from state to state, total state figures on manufacturing throw little light on the relative density of manufacturing in the several states. Comparison between states should be made, therefore, on the basis of the number of wage earners in manufacturing per 1,000 population or value added by manufacture per square mile. If the measure of density of manufacturing be value added by manufacture per square mile, as Table 1 shows, 18 states ranked ahead of Tennessee in 1939, only two more than when area differences are disregarded. It will be observed that nine of these 18 states reported more than five times as much value added by manufacture per square mile as Tennessee. However, in 1939, only two southern states, namely, North Carolina and Virginia, produced more value added by manufacture per square mile than Tennessee. The rank of the 13 southern states on the basis of value added by manufacture per square

¹On the basis of value added by manufacture, the states which had more manufacturing than Tennessee in 1939, in order of size, were: (1) New York, (2) Pennsylvania, (3) Illinois, (4) Ohio, (5) Michigan, (6) New Jersey, (7) Massachusetts, (8) California, (9) Indiana, (10) Connecticut, (11) Wisconsin, (12) Missouri, (13) North Carolina, (14) Texas, (15) Maryland, and (16) Virginia. On the basis of value of product only three southern states ranked ahead of Tennessee, namely, Texas, North Carolina, and Virginia. Value of manufactured product, however, is a less accurate comparative measure of manufacturing in different states than the number of wage earners and value added by manufacture because of the movement across state borders of raw materials and semi-finished goods and because of the duplication involved in including the value of product turned out by one plant as raw materials in a higher stage of manufacture.

TABLE I.

LEADING MANUFACTURING STATES IN 1939 ACCORDING TO
VALUE ADDED BY MANUFACTURE PER SQUARE MILE AND
WAGE EARNERS IN MANUFACTURING PER 1000 POPULATION

| Rank | State | Value added per square mile (thousands of dollars) | Times Tennessee | Rank | State | Wage earners per 1000 Population | Times Tennessee |
|------|----------------|--|--------------------|------|----------------|---|--------------------|
| 1. | Rhode Island | 223.1 | 29.04 | 1. | Rhode Island | 149.0 | 3.30 |
| 2. | New Jersey | 203.2 | 26.45 | 2. | Connecticut | 136.6 | 3.02 |
| 3. | Massachusetts | 148.1 | 19.27 | 3. | New Hampshire | 113.5 | 2.51 |
| 4. | Connecticut | 143.6 | 18.69 | 4. | Massachusetts | 106.5 | 2.36 |
| 5. | New York | 70.3 | 9.15 | 5. | New Jersey | 104.2 | 2.31 |
| 6. | Pennsylvania | 55.6 | 7.23 | 6. | Michigan | 99.5 | 2.20 |
| 7. | Ohio | 52.2 | 6.79 | 7. | Maine | 89.3 | 1.98 |
| 8. | Maryland | 42.9 | 5.58 | 8. | Pennsylvania | 86.7 | 1.92 |
| 9. | Illinois | 39.3 | 5.11 | 9. | Ohio | 86.6 | 1.92 |
| 10. | Michigan | 31.2 | 4.05 | 10. | Indiana | 81.0 | 1.79 |
| 11. | Delaware | 28.1 | 3.65 | 11. | Maryland | 77.8 | 1.72 |
| 12. | Indiana | 26.9 | 3.50 | 12. | Delaware | 76.5 | 1.69 |
| 13. | Wisconsin | 12.4 | 1.62 | 13. | North Carolina | 75.6 | 1.67 |
| 14. | New Hampshire | 11.6 | 1.52 | 14. | Illinois | 75.5 | 1.67 |
| 15. | North Carolina | 11.2 | 1.46 | 15. | New York | 71.1 | 1.57 |
| 16. | Virginia | 9.4 | 1.23 | 16. | South Carolina | 66.8 | 1.48 |
| 17. | West Virginia | 8.9 | 1.16 | 17. | Wisconsin | 64.0 | 1.42 |
| 18. | Missouri | 8.6 | 1.11 | 18. | Vermont | 60.6 | 1.34 |
| 19. | Tennessee | 7.7 | 1.00 | 19. | Oregon | 58.4 | 1.29 |
| | | | | 20. | Washington | 52.2 | 1.15 |
| | | | | 21. | Georgia | 50.6 | 1.12 |
| | | | | 22. | Virginia | 50.0 | 1.11 |
| | | | | 23. | Missouri | 47.2 | 1.04 |
| | | | | 24. | Tennessee | 45.2 | 1.00 |

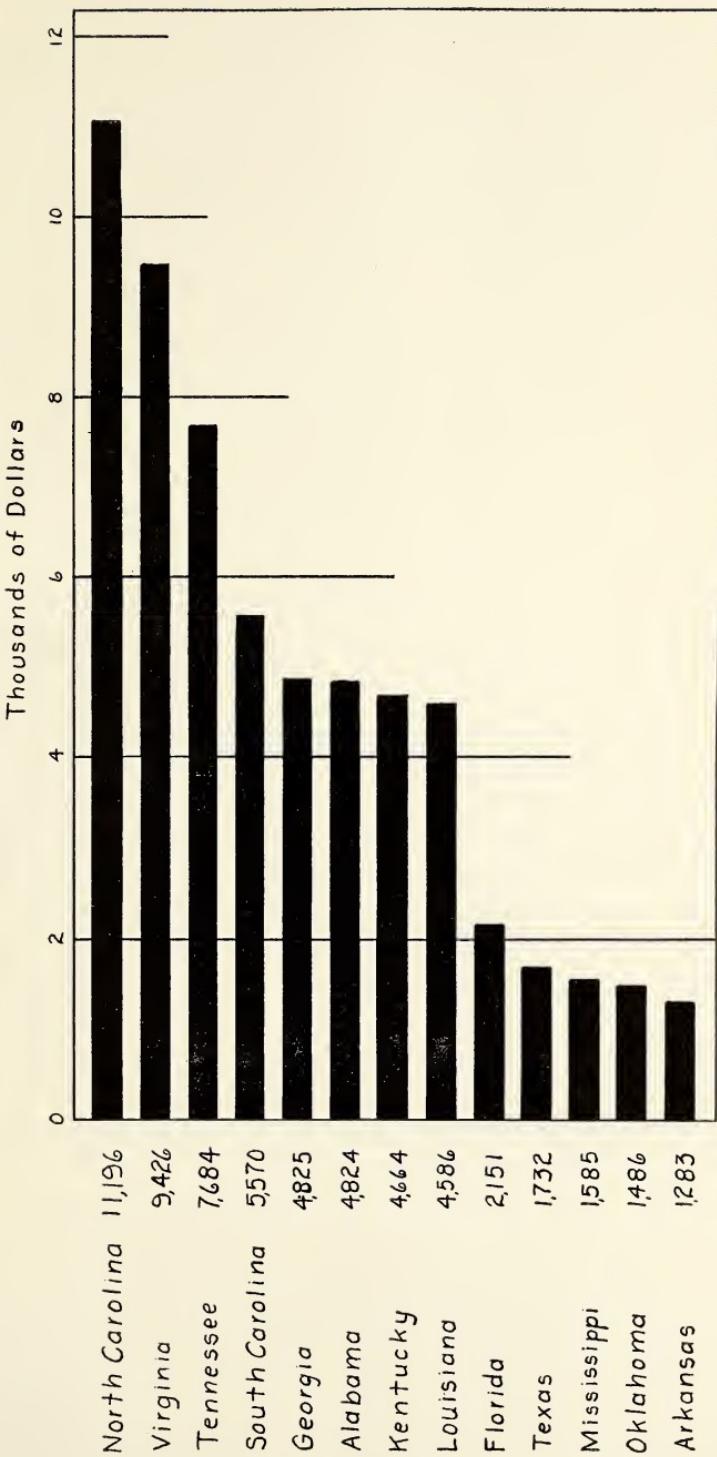
Source: Value added by manufacture and number of wage earners from *Biennial Census of Manufactures, 1939*.

Population from estimates by Bureau of the Census.

mile is shown in Chart 3. On a per area basis, Texas drops to tenth place and Tennessee moves into third place behind North Carolina and Virginia. In 1939, on the basis of the number of wage earners in manufacturing per 1,000 population, 23 states ranked ahead of Tennessee. In five of these states one or more persons out of every ten was engaged in manufacturing, but in Tennessee only one person out of every 22 was so employed. Thus when the population factor is introduced, Tennessee drops in comparison with all the states, but gains relative to the southern states.

Despite the fact that measured by the average number of wage earners, value added by manufacture, or value of product, less than one-half of the 48 states ranked above Tennessee in manufacturing in 1939, Tennessee has less manufacturing activity than the average

CHART 3
VALUE ADDED BY MANUFACTURE PER SQUARE MILE,
THIRTEEN SOUTHERN STATES, 1939.



Source: Biennial Census of Manufactures, 1939.

of the United States as a whole on a per area or a per capita basis. With 1.39 per cent of the land area of the United States, Tennessee, in 1939, accounted for only 1.30 per cent of the value added by manufacture in the nation; likewise, with 2.21 per cent of the estimated population of the United States in 1939 Tennessee reported only 1.67 per cent of the wage earners in manufacturing. Looked at from another angle, the number of wage earners in manufacturing per 1,000 estimated population in 1939 was 45.2 in Tennessee as against 59.9 for the nation as a whole.¹ In the same year value added by manufacture per square mile of area amounted to \$7,685 in Tennessee as compared with an average of \$8,310 for the United States. Thus on the basis of the number of wage earners in manufacturing per 1,000 population, manufacturing in Tennessee was only 75.5 per cent as important as in the United States; and, on the basis of value added by manufacture per unit of area, manufacturing in Tennessee was only 92.5 per cent as highly developed as the average for the nation as a whole.

COMPARATIVE GROWTH OF MANUFACTURING IN TENNESSEE, THE UNITED STATES, TEN LEADING INDUSTRIAL STATES AND THIRTEEN SOUTHERN STATES

Turning from the amount and density of manufacturing in Tennessee and the state's rank relative to other states, let us investigate the question of the relative growth of manufacturing in Tennessee from 1899 to 1939. How much has manufacturing in Tennessee increased during the 40 years from 1899 to 1939? How does the rate of growth of manufacturing in Tennessee compare with the rate of growth of manufacturing in the United States? Has the growth of manufacturing in Tennessee kept pace with or exceeded the industrial expansion of the South as a whole? How does the rate of growth of manufacturing in Tennessee compare with the rate of growth in the 47 other states, the ten leading industrial states, and the 12 other southern states? These are the questions which now claim our attention.

No measure of the physical volume of manufacturing in Tennessee is available from 1899 to 1939. While the Bureau of

¹A more accurate measure would have been the per cent of the total gainfully employed engaged in manufacturing. The 1940 census data on employment were not available at the time of writing and the 1930 figures are too far out of date. That smaller number of employable workers per 1,000 population in Tennessee than for the nation as a whole would naturally make the number of wage earners in manufacturing per 1,000 population in Tennessee lower than in the nation as a whole. The discrepancy due to this fact, however, would be small compared with the difference shown above.

TABLE II.

THE GROWTH OF MANUFACTURING IN TENNESSEE AS MEASURED BY EIGHT STATISTICAL SERIES, 1899 TO 1939

| Year | Number of establishments | Average number of wage earners | Wages (Thousands of dollars) | Cost of materials and purchased energy | Value added by manufacture | | Value of product (Thousands) In 1926 |
|------|--------------------------|--------------------------------|---------------------------------|--|----------------------------|---------|--|
| | | | | | Actual | In 1926 | |
| 1939 | 2,289 | 131,874 | 109,662 | 407,746 | 320,342 | 414,951 | 728,088 |
| 1937 | 2,083 | 135,073 | 109,248 | 412,360 | 295,627 | 339,022 | 707,987 |
| 1935 | 2,011 | 116,624 | 86,714 | 303,764 | 227,575 | 276,855 | 531,338 |
| 1933 | 1,561 | 94,909 | 60,871 | 184,090 | 172,939 | 245,304 | 357,028 |
| 1931 | 1,948 | 92,660 | 74,056 | 233,722 | 212,460 | 275,922 | 446,182 |
| 1929 | 2,855 | 128,400 | 115,877 | 407,611 | 322,898 | 341,691 | 730,509 |
| 1927 | 2,098 | 114,968 | 101,198 | 351,436 | 262,604 | 276,425 | 614,041 |
| 1925 | 2,162 | 107,645 | 95,255 | 358,097 | 243,391 | 241,939 | 601,488 |
| 1923 | 2,307 | 106,504 | 92,482 | 334,111 | 221,154 | 222,938 | 555,266 |
| 1921 | 2,245 | 75,446 | 65,741 | 225,951 | 148,087 | 143,356 | 374,038 |
| 1919 | 4,589 | 95,167 | 81,355 | 344,767 | 211,486 | 161,934 | 556,253 |
| 1914 | 4,775 | 74,373 | 33,083 | 123,430 | 88,641 | 130,739 | 425,921 |
| 1909 | 4,609 | 73,840 | 28,252 | 104,016 | 76,201 | 110,918 | 312,789 |
| 1904 | 3,175 | 60,572 | 22,806 | 79,352 | 58,609 | 96,874 | 180,217 |
| 1899 | 3,116 | 45,963 | 14,728 | 54,559 | 38,190 | 68,935 | 262,325 |
| | | | | | | | 228,033 |
| | | | | | | | 137,960 |
| | | | | | | | 92,749 |
| | | | | | | | 167,417 |

Source: 1899 to 1929, inclusive, Fifteenth Census of the United States, *Manufactures*: 1929, Vol. III, p. 497.
 1931 to 1939, *Biennial Census of Manufactures*.

the Census has reported six statistical series on manufacturing for each state by five-year periods from 1899 to 1919 and by two-year periods from 1919 to 1939, not one of these six series is an accurate measure of the growth of manufacturing. These six series are presented in Table II.

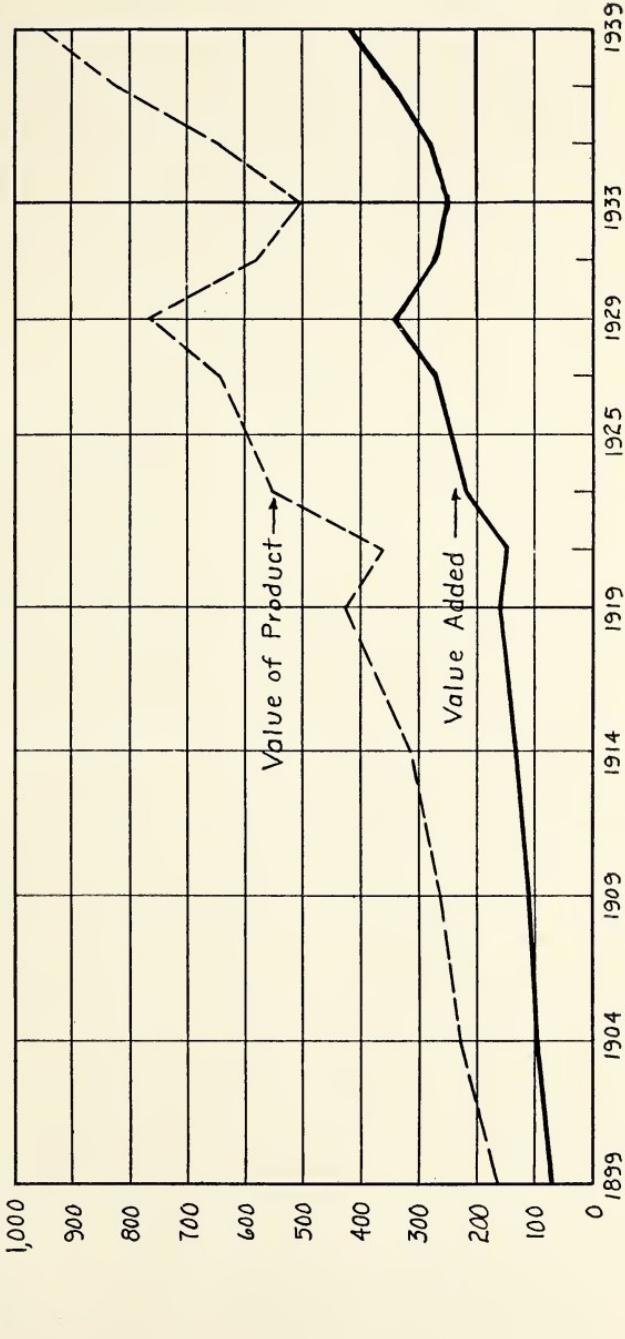
Three of the most useful measures of the growth of manufacturing are average number of wage earners, value of products, and value added by manufacture. But, in addition to the errors introduced by an increase in the minimum size of manufacturing establishments canvassed in 1921 and subsequent periods, all three of the series are further defective as measures of the growth of manufacturing. Because of technological changes and the increasing mechanization of industry, the number of wage earners in manufacturing has increased more slowly than the volume of manufacturing. The two value series, value of product and value added by manufacture, are seriously impaired as measures of the growth of manufacturing from 1899 to 1939 because of large upward and downward changes in the general level of wages and commodity prices. This defect is partially corrected by expressing the two value series in terms of a dollar of constant purchasing power, that is, by dividing each series by the United States Bureau of Labor Statistics index of wholesale prices, which uses the figures for 1926 as a base year. Value added by manufacture and value of products thus corrected for price changes from 1899 to 1939 are shown in columns 6 and 8 in Table II. The growth of manufacturing in Tennessee from 1899 to 1939, as measured by value of product and value added by manufacture corrected for price change, is shown by the two curves on Chart 4.

Measured by the number of wage earners in manufacturing and the value figures, corrected as far as possible for price changes, the percentages of change in manufacturing in Tennessee for the over-all period from 1899 to 1939 and four shorter periods are as follows:

| Measure of manufacturing | Per Cent of Increase or Decrease | | | | |
|--------------------------------|----------------------------------|------------|------------|------------|------------|
| | 1899 | 1899 | 1914 | 1919 | 1929 |
| | to 1939 | to 1914 | to 1919 | to 1929 | to 1939 |
| Wage earners | 186.9 | 61.8 | 28.0 | 34.9 | -5.4 |
| Value added by manufacture | 501.9 | 89.7 | 23.9 | 111.0 | 21.4 |
| Value of product | 463.3 | 86.8 | 36.2 | 81.5 | 23.0 |

Because of the upward movement of prices from 1899 to 1914 and the tremendous increase in prices in the World War I from 1914 to 1919, the actual dollar figures reported by the Census of

CHART 4
 THE GROWTH OF MANUFACTURING IN TENNESSEE, AS MEASURED BY VALUE
 OF PRODUCT AND VALUE ADDED BY MANUFACTURE CORRECTED FOR
 PRICE CHANGE BY CENSUS PERIODS, 1899 - 1939.



Source: Biennial Census of Manufactures.

Manufactures, uncorrected for price changes, would, of course, give much higher percentages of increase from 1899 to 1939. In this period, based on the reported dollar values uncorrected for price changes, wages paid increased 645 per cent, value of product increased 685 per cent, and value added by manufacture increased 739 per cent. While these percentages are higher than the ones above computed from the data corrected for prices changes, the corrected figures are much better rough measures of the growth of manufacturing in Tennessee than the percentages computed from the uncorrected data. These three measures of manufacturing indicate different rates of growth, but the most dependable of the three series—value added by manufacture—shows that manufacturing in Tennessee increased, roughly, 500 per cent from 1899 to 1939.

The statistical data on manufacturing, upon which the above analysis is based, clearly shows marked expansion in manufacturing in Tennessee from 1899 to 1939. The next question is: How does the rate of growth of manufacturing in Tennessee compare with the rate of growth of manufacturing in the United States as a whole, 10 leading industrial states, and 13 southern states as a group?

This question is answered precisely and definitely by the data presented in Table III. These figures show how value added by manufacture in Tennessee compares with the totals for: (1) the entire United States; (2) the 10 leading manufacturing states; (3) the 13 southern states as a group; and (4) each southern state separately. To simplify this comparison, Tennessee's total value added by manufacture is expressed as 1.00 for every census period—regardless of increases or decreases—and totals for other states are expressed as a multiple of the Tennessee figures. For example, the figure of 98.75 for the United States in 1929 shows that value added by manufacture in the United States was 98.75 times as large as value by manufacture in Tennessee in that year, and the figure of 2.15 shows that value added in North Carolina was 2.15 times the value added in Tennessee.

Interpretation of the figures in the Table III is simple. They permit the reader quickly to determine two facts. First, by reading a given column vertically for a given census period, for example 1939, the reader is able to determine how manufacturing in the United States, in the ten leading industrial states, and in the 13 southern states compares with manufacturing in Tennessee. In 1939 manufacturing in the United States was 77.14 times as large as in Tennessee, in the 10 leading states 54.56 as large, in North Carolina 1.70 as large, and so on.

TABLE III.

VALUE ADDED BY MANUFACTURE IN THE UNITED STATES, 10 LEADING STATES AND 13 SOUTHERN STATES
EXPRESSED AS A MULTIPLE OF VALUE ADDED BY MANUFACTURE IN TENNESSEE BY CENSUS PERIODS, 1899-1939

| Area | 1899 | 1904 | 1909 | 1914 | 1919 | 1921 | 1923 | 1925 | 1927 | 1929 | 1931 | 1933 | 1935 | 1937 | 1939 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| United States | 126.50 | 105.43 | 110.04 | 109.54 | 117.31 | 123.79 | 116.89 | 110.02 | 105.05 | 98.75 | 93.51 | 84.06 | 85.67 | 85.15 | 77.14 |
| 10 Leading States | 90.87 | 76.19 | 79.05 | 80.04 | 85.39 | 90.86 | 85.63 | 80.48 | 77.06 | 71.88 | 66.99 | 59.34 | 61.98 | 61.35 | 54.56 |
| 13 Southern States | 11.17 | 10.91 | 11.89 | 11.35 | 12.34 | 12.19 | 11.65 | 11.92 | 11.37 | 10.96 | 10.31 | 10.29 | 9.79 | 10.04 | 9.85 |
| 13 Southern States: | | | | | | | | | | | | | | | |
| Tennessee | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| North Carolina | 1.05 | 1.08 | 1.24 | 1.35 | 1.97 | 1.93 | 1.97 | 2.05 | 2.26 | 2.15 | 1.81 | 1.85 | 1.66 | 1.61 | 1.70 |
| Texas | 1.01 | 1.01 | 1.24 | 1.22 | 1.41 | 1.84 | 1.50 | 1.61 | 1.39 | 1.43 | 1.29 | 1.37 | 1.35 | 1.49 | 1.42 |
| Virginia | 1.29 | 1.11 | 1.24 | 1.23 | 1.29 | 1.25 | 1.10 | 1.13 | 1.24 | 1.18 | 1.66 | 1.19 | 1.15 | 1.14 | 1.19 |
| Georgia | 1.18 | 1.15 | 1.13 | 1.05 | 1.20 | 1.93 | 1.01 | 1.03 | .95 | .91 | .86 | .98 | .86 | .91 | .88 |
| Alabama | .89 | .83 | .82 | .81 | .91 | .79 | .99 | .93 | .89 | .80 | .71 | .66 | .67 | .80 | .77 |
| Louisiana | .94 | 1.18 | 1.17 | 1.10 | 1.16 | 1.13 | .98 | 1.01 | .80 | .76 | .62 | .68 | .64 | .68 | .65 |
| Kentucky | 1.55 | 1.25 | 1.47 | 1.30 | .76 | .87 | .84 | .82 | .75 | .73 | .69 | .71 | .79 | .62 | .59 |
| South Carolina | .60 | .50 | .62 | .54 | .73 | .64 | .63 | .55 | .49 | .52 | .67 | .51 | .59 | .53 | |
| Florida | .56 | .58 | .61 | .53 | .57 | .53 | .48 | .63 | .48 | .42 | .42 | .38 | .38 | .35 | .37 |
| Oklahoma | .07 | .14 | .26 | .35 | .42 | .54 | .38 | .42 | .39 | .46 | .32 | .38 | .35 | .37 | .32 |
| Mississippi | .45 | .54 | .57 | .43 | .48 | .38 | .41 | .40 | .35 | .33 | .22 | .21 | .22 | .26 | .23 |
| Arkansas | .57 | .55 | .53 | .44 | .46 | .37 | .37 | .35 | .30 | .30 | .21 | .21 | .21 | .22 | .21 |

Source: Computed from data obtained from the Census of Manufactures.

Second, by comparing the figures along a row for a given area, say the United States or North Carolina, the reader is able to determine at a glance, as between *any two census periods*, adjacent or far apart, whether manufacturing in the given area increased or decreased at a rate equal to, greater, or less than the Tennessee rate.¹ If from the earlier to the later census period the figure increases, manufacturing in that area gained at a faster rate than manufacturing in Tennessee; if the figure remains the same, manufacturing in the given area and in Tennessee changed at the same rate; if the figure declines, then manufacturing in Tennessee gained relative to manufacturing in that area. For example, since value added by manufacture in the United States declined from 123.79 times value added in Tennessee in 1921 to 84.06 times the Tennessee figure in 1933, manufacturing in Tennessee gained at the faster rate during this 12 year period.

The following conclusions concerning the relative rate of growth of manufacturing in Tennessee and the other areas stand out clearly from an examination of the ratios in Table III.

I. Tennessee and the United States

1. For the period as a whole from 1899 to 1939, manufacturing in Tennessee gained sharply as compared with manufacturing in the United States. Despite fluctuations in the ratios from one census period to the next, the general trend of the ratios from 1899 to 1939 is markedly downward.
2. From 1904 to 1921, and especially during the First World War, from 1914 to 1919, manufacturing in Tennessee failed to develop as rapidly as manufacturing in the nation as a whole.
3. Practically all of Tennessee's gain in manufacturing relative to the United States was concentrated in the 12 year period from 1921 to 1933.
4. In the Great Depression from 1929 to 1933, manufacturing activity declined less in Tennessee than in the United States, as indicated by the declining ratios during this period; but, in the recovery period from 1933 to 1937, manufacturing in Tennessee lost ground

¹Upon the assumption, which appears valid within reasonable limits, that the percentage-wise effect of upward and downward general price movements upon value added by manufacture was, roughly, equal in the different areas, this comparison of the relative rates of growth of manufacturing is valid, even though based on changing value series.

slightly in relation to the nation as a whole, but gained much more rapidly than the nation from 1937 to 1939.

II. *Ten Leading Industrial States in 1937*¹

If we lump the 10 leading manufacturing states in 1937, and compare the rate of growth of manufacturing in Tennessee with the rate of growth in the ten states as a whole, we find the same comparative rates as listed above for the United States.

III. *Tennessee and 13 Southern States as a Group Including Tennessee*

1. Manufacturing in Tennessee, likewise, grew at a faster rate than did manufacturing in the 13 southern states as a whole from 1899 to 1939, but Tennessee's gain relative to the South was less than the state's gain relative to the United States.
2. As in the case of the United States, in the period from 1904 to 1919, and especially 1914 to 1919, manufacturing in Tennessee lagged relative to manufacturing in the 13 southern states combined.
3. All of Tennessee's gain in manufacturing relative to the Southern States was concentrated in the 16 years from 1919 to 1935. It is interesting to note that Tennessee's gain relative to the South began two years earlier and lasted two years longer than Tennessee's gain relative to the nation as a whole.
4. Manufacturing in Tennessee, as indicated by the declining ratios, declined less rapidly than manufacturing in the South as a whole in the Great Depression from 1929 to 1933 and gained more rapidly than the South in the first phase of recovery from 1933 to 1935. In the second phase of recovery from 1935 to 1939, however, manufacturing in Tennessee increased at approximately the same rate as manufacturing in the South as a whole.

IV. *Individual Southern States*

1. In the period from 1899 to 1939 manufacturing in only three southern states, namely, North Carolina, Texas, and Oklahoma, increased more rapidly than manufacturing in Tennessee.

¹These 10 states in order of value added by manufacture are: (1) New York, (2) Pennsylvania, (3) Illinois, (4) Ohio, (5) Michigan, (6) New Jersey, (7) Massachusetts, (8) California, (9) Indiana, and (10) Wisconsin.

2. Manufacturing increased more rapidly than in Tennessee, in Virginia, North Carolina, Louisiana, Texas and Oklahoma from 1899 to 1914; in all southern states except Kentucky in the war period from 1914 to 1919; in North Carolina and Texas from 1919 to 1929; and in Virginia and South Carolina from 1929 to 1939.

V. All 48 States

1. Manufacturing in only nine of the 48 states increased more rapidly than in Tennessee from 1899 to 1939. Four of these nine are large manufacturing states: California, Michigan, North Carolina, and Texas. The other five, new and relatively small manufacturing states in the West, are: Oklahoma, Oregon, Washington, Idaho, and Nevada.
2. *In the 16-year period from 1923 to 1939, Virginia was the only state in which manufacturing increased more rapidly than in Tennessee.* During this period, value added by manufacture increased 55.8 per cent in Virginia as compared with 44.9 per cent in Tennessee.
3. In the decade from 1929 to 1939 only four states showed a more rapid rate of gain in manufacturing than Tennessee: Maryland, Virginia, South Carolina, and Nevada.

This analysis clearly shows that the *rate* of growth of manufacturing in Tennessee when compared with the *rates* of growth of manufacturing in the United States, the South, and individual states, has been comparatively rapid, especially in the 16 years from 1923 to 1939. In his satisfaction over this fact the reader should not overlook two significant facts which have important implications for an industrial development program in Tennessee. First, as shown in the early part of this chapter, Tennessee is still far from being one of the large manufacturing states. On the basis of value added by manufacture per square mile in 1939, 18 states ranked ahead of Tennessee and as many as eight of these reported more than five times as much value added by manufacture per square mile as Tennessee. By this same measure, in 1939, manufacturing in Tennessee was only 92.5 per cent as dense (highly developed) as the average for the nation as a whole. Second, the rapid growth of manufacturing in Tennessee in comparison with other states and areas has been due in a very large part, if not almost entirely, to the location and growth of five large plants, namely, the Aluminum Company of

America (Alcoa), Bemberg and North American Rayon (Elizabethton), Tennessee Eastman (Kingsport), and E. I. Dupont (Old Hickory). Thus the rapid growth of manufacturing in the state has not been due to the wide spread location of plants to take advantage of a variety of unique industrial locational factors, or in response to an area-wide industrial development program, but has resulted from what may well be the more or less fortuitous location of a few very large plants.

INDUSTRIES AND INDUSTRIAL GROUPS IN TENNESSEE

Next in importance to the magnitude and relative growth of manufacturing in Tennessee examined above is: What industries and industrial groups make up the state total? What are the leading industries in Tennessee? Is manufacturing highly concentrated in a few industries or is it well diversified? How big are the major industrial groups in the state? What industries have been primarily responsible for the rapid growth of manufacturing in Tennessee in recent years? These are the questions which now claim our attention.

Arranged in order of value added by manufacture, Table IV shows the 19 industries in Tennessee in 1937 which reported value added by manufacture of more than \$3,000,000, which is slightly more than one per cent of the state total.¹ The absolute and relative importance of manufacturing in these industries is indicated more accurately by value added by manufacture than by value of product, since in many industries, such as meat packing and flour milling, a large part of the value of product is accounted for by raw materials.

¹The Census Bureau classes all manufacturing activity into roughly 300 individual industries. According to the Census Bureau the classification must "be broad enough to cover all the activities—or at least, the principal activities—of such establishments." The bases of industrial classification are stated more specifically by the Census Bureau as follows:

The effort has been made to distinguish, so far as practicable, each well-defined or well-recognized industry. The classification has been based on prevailing conditions as to the actual organization of industry and the distribution of the various branches of production among individual establishments. It has been necessary, however, in some cases to combine the data for two or more industries which are usually considered fairly distinct from one another, because of the considerable amount of overlapping among them. Such cases arise where, although the majority of the establishments concerned confine their business to one or another of the industries, a few important establishments combined the activities of two or more industries to such an extent as to render it impracticable to obtain separate data for the different lines of activity. (*Biennial Census of Manufactures*, 1937).

TABLE IV
THE NINETEEN LEADING INDUSTRIES IN TENNESSEE, ACCORDING TO VALUE ADDED BY MANUFACTURE, 1937 (a)

| Rank | Industry | Value added by manufacture Thousands of dollars | Value of product | Number of wage earners | Per cent of state total | | |
|------|--|--|------------------|------------------------|-------------------------|------------------|--------------|
| | | | | | Value added | Value of product | Wage earners |
| 1. | Rayon and allied products | 39,253 | 59,133 | 9,582 | 13.28 | 8.35 | 7.09 |
| 2. | Hosiery | 15,209 | 29,219 | 14,554 | 5.14 | 4.13 | 11.03 |
| 3. | Printing and publishing, newspapers, periodicals | 10,543 | 14,501 | 1,835 | 3.57 | 2.05 | 1.36 |
| 4. | Boots, shoes, non-rubber | 10,041 | 20,898 | 4,464 | 3.40 | 2.95 | 3.30 |
| 5. | Heating and cooking apparatus, except electric | | 8,612 | 15,265 | 5,427 | 2.91 | 2.16 |
| 6. | Bread and other bakery products | | 7,854 | 15,866 | 2,846 | 2.66 | 2.24 |
| 7. | Knitted underwear | | 7,662 | 14,358 | 5,521 | 2.59 | 2.03 |
| 8. | Cotton woven goods (over 12 inches in width) | | 6,744 | 13,542 | 5,064 | 2.28 | 1.91 |
| 9. | Drugs and medicines | | 5,782 | 8,811 | 761 | 1.96 | 1.24 |
| 10. | Non-alcoholic beverages | | 5,328 | 8,775 | 879 | 1.80 | 1.24 |
| 11. | Work and sport clothing, except leather | | 4,877 | 15,471 | 6,006 | 1.65 | 2.19 |
| 12. | Furniture (including store and office fixtures) | | 4,754 | 9,327 | 3,308 | 1.61 | 1.32 |
| 13. | Tobacco and snuff | | 4,626 | 14,493 | 1,057 | 1.56 | 2.05 |
| 14. | Meat packing, wholesale | | 4,454 | 29,491 | 1,803 | 1.51 | 4.17 |
| 15. | Printing and publishing: books, music and job | | 4,108 | 6,622 | 1,388 | 1.39 | 0.94 |
| 16. | Flour and other grain-mill products | | 3,880 | 22,674 | 1,142 | 1.31 | 3.20 |
| 17. | Cement | | 3,311 | 5,069 | 764 | 1.12 | 0.72 |
| 18. | Cottonseed oil, cake and meal | | 3,126 | 20,151 | 1,149 | 1.06 | 2.85 |
| 19. | Shortenings (other than lard), vegetable cooking oils and salad oils | | 3,089 | 36,457 | 726 | 1.04 | 5.15 |
| | | | | | | | 0.54 |

(a) Includes all industries which produced more than one per cent of the total of value added by manufacture in the state.

Source: *Biennial Census of Manufactures, 1937.*

The data presented in Table V show that manufacturing in Tennessee in 1939 was more diversified, that is, more equally distributed among different industries, than in all but three of the 13 other southern states, namely, Kentucky, Arkansas and Mississippi. Actually, only Kentucky has more diversified manufacturing than Tennessee. While Arkansas and Mississippi appear in Table V to have less concentration of manufacturing than Tennessee, these two states have 31.5 per cent and 25.8 per cent of all manufacturing,

respectively, in lumber and timber products not elsewhere classified. Thus, these states have more than one-fourth of all manufacturing in lumber products alone. This statement holds irrespective of whether the measure of concentration of manufacturing be the percentage of total value added by manufacture in the state in three, five or ten leading industries.

TABLE V
PER CENT OF TOTAL VALUE ADDED BY MANUFACTURE IN
THREE, FIVE, AND TEN LEADING INDUSTRIES, 13
SOUTHERN STATES, 1937

| State | Per cent of state's total value added by manufacture | | |
|----------------------|---|----------------------------|---------------------------|
| | Three leading industries | Five leading industries | Ten leading industries |
| Kentucky ----- | 13.5 | 19.3 | 30.9 |
| Arkansas ----- | 16.1 | 24.8 | 36.1 |
| Mississippi ----- | 19.6 | 28.0 | 41.7 |
| Tennessee ----- | 22.0 | 28.3 | 39.6 |
| Louisiana ----- | 23.2 | 29.8 | 40.8 |
| Florida ----- | 26.9 | 36.2 | 50.5 |
| Alabama ----- | 28.3 | 34.0 | 43.3 |
| Virginia ----- | 34.5 | 42.1 | 51.8 |
| Texas ----- | 34.9 | 41.1 | 52.3 |
| Georgia ----- | 36.6 | 42.3 | 52.5 |
| Oklahoma ----- | 42.3 | 51.7 | 66.7 |
| North Carolina ----- | 49.6 | 63.3 | 74.9 |
| South Carolina ----- | 66.4 | 72.2 | 79.1 |

Source: Computed from data from *Biennial Census of Manufacturers*, 1937.

As shown in Table IV, the leading industry in Tennessee, rayon and allied products, accounted for only 13.3 per cent of all value added by manufacture in the state and the second, hosiery, accounted for only 5.1 per cent of the total. No other industry dominates the state picture. There are 16 industries between hosiery, which reported slightly above five per cent of the total value added by manufacture in the state, and cottonseed oil, cake and meal, which reported slightly above one per cent of the state total. As compared with Tennessee, South Carolina reported over 55 per cent of all value added by manufacture in cotton woven goods, and 15 per cent more in closely related textile lines; North Carolina reported over 23 per cent in cigarettes and 43 per cent more in five leading textile lines; Georgia had over 26 per cent in woven goods; Arkansas and Mississippi depended heavily upon lumber and timber products with 31 and 26 per cent, respectively; in Oklahoma and Texas petroleum refining accounted for 27 and 25 per cent, respectively; and Florida had over 30 per cent in cigars and lumber and timber products.

TABLE VI

GROWTH OF MANUFACTURE BY INDUSTRIAL GROUPS AS REPRESENTED BY VALUE ADDED BY MANUFACTURE,
TENNESSEE, 1899 to 1937
(In thousands of dollars)

| Industrial groups ^(a) | 1899 ^(b) | 1904 | 1909 | 1914 | 1919 | 1925 | 1929 | 1937 |
|--|---------------------|--------|--------|--------|---------|---------|---------|---------|
| Chemical and allied products | 2,833 | 4,217 | 4,852 | 7,877 | 21,060 | 19,647 | 48,754 | 77,081 |
| Textiles and their products | 3,826 | 4,206 | 5,564 | 7,560 | 28,092 | 38,764 | 46,293 | 47,830 |
| Food and kindred products | 6,842 | 7,963 | 10,567 | 12,664 | 26,762 | 30,968 | 43,264 | 37,705 |
| Forest products | 11,865 | 18,374 | 19,863 | 18,974 | 38,790 | 38,470 | 38,306 | 24,502 |
| Paper, printing, publishing and allied products | 2,684 | 3,836 | 5,280 | 6,015 | 11,607 | 18,679 | 24,830 | 21,889 |
| Leather and its manufactures | 1,378 | 1,751 | 1,742 | 607 | 3,735 | 4,383 | 6,021 | 10,720 |
| Iron and steel and their products ^(c) | 2,750 | 1,698 | 2,545 | 3,163 | 6,133 | 10,249 | 12,790 | 9,605 |
| Stone, clay, and glass products | 1,846 | 1,875 | 2,484 | 2,733 | 4,378 | 7,912 | 11,971 | 9,120 |
| Machinery (other than transportation equipment) | 2,595 | 3,567 | 5,343 | 5,487 | 12,345 | 8,257 | 10,868 | 3,958 |
| Nonferrous metals | 611 | 442 | 724 | 443 | 1,093 | 439 | 1,687 | 301 |
| Railroad repair shops | 1,585 | 2,861 | 3,661 | 5,255 | 16,563 | 15,328 | 15,259 | (d) |
| Transportation equipment | 992 | 1,610 | 2,708 | 74 | 4,978 | 2,592 | 10,457 | (d) |
| Miscellaneous industries | 4,490 | 6,208 | 10,868 | 17,788 | 35,950 | 47,705 | 52,397 | 52,916 |
| All industries | 44,296 | 58,609 | 76,201 | 88,641 | 211,486 | 243,391 | 322,898 | 295,627 |

^(a) Arranged in order of importance in 1937.^(b) 1899 includes data on hand and neighborhood industries, hence the figures are not comparable with 1904 and subsequent periods.^(c) Not including machinery.^(d) Data not reported for 1937.

Source: Compiled from data reported by Census of Manufactures.

Table IV and the above discussion consider the specific types of industries as reported by the census. A different picture results from a study of broad industrial groups, classified by lumping together all specific types of industries which are closely related. On the basis of the broad industrial groups used by the Census of Manufactures and subject to considerable error from unavoidable shifts in classification over the period, the relative importance of manufacturing in the 12 broad industrial groups in Tennessee for eight census periods from 1899 to 1937, as measured by value added by manufacture, is indicated roughly by the dollar figures in Table VI and the percentages in Table VII.

In 1937, chemical and allied products, including the rapidly growing rayon industry, was the leading industrial group in Tennessee and accounted for more than one-fourth of all value added by manufacture in the state. The second leading industrial group, textiles and their products, accounted for roughly one-sixth of the state total, and the third group, food and kindred products, reported approximately one-eighth of the state total. The fourth and fifth groups, forest products and paper, printing, publishing and allied products, respectively, were slightly less than one-third as large as the leading chemical group in 1937.

The three leading groups, chemicals and allied products, textiles and their products, and food and kindred products accounted for 55.0 per cent of all the manufacturing in Tennessee in 1937, and the five leading groups reported 72.3 per cent of the state total. There has been no marked tendency toward concentration of a larger per cent of the state's total manufacturing in the leading industrial groups from 1899 to 1937. The two leading industrial groups, at that time, forest products and food and kindred products, represented 42.3 per cent of the state total in 1899, 45.0 per cent in 1904, 40.0 per cent in 1909, and 35.7 per cent in 1919. The two leading industrial groups, forest products and textiles, represented 31.6 per cent of the state total in 1919 and 31.7 per cent in 1925. The chemical and textile groups, the two leading groups at the time, accounted for 29.4 per cent of the total in 1929 and increased their share to 42.3 per cent in 1937. The five leading industries—rather consistently the leading five but not in the same order—accounted for 65.9 per cent of all manufacturing in Tennessee in 1904, 59.7 per cent in 1919, 62.4 per cent in 1929, and 72.3 per cent in 1937. The marked increase in the relative importance of these five groups in recent years has been due, as in the case of the two leading industries, to the rapid rise of the textile group and the chemical group which includes rayon.

TABLE VII
RELATIVE IMPORTANCE OF MAJOR INDUSTRIAL GROUPS AS SHOWN BY PERCENTAGES OF TOTAL VALUE ADDED
BY MANUFACTURE IN TENNESSEE, 1899-1937

| Industrial groups ^(a) | Per cent of total value added by manufacture | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|
| | 1899 ^(b) | 1904 | 1909 | 1914 | 1919 | 1925 | 1929 | 1937 |
| Chemical and allied products | 6.4 | 7.2 | 6.4 | 8.9 | 10.0 | 8.1 | 15.1 | 26.1 |
| Textiles and their products | 8.6 | 7.2 | 7.3 | 8.5 | 13.3 | 15.9 | 14.3 | 16.2 |
| Food and kindred products | 15.4 | 13.6 | 13.9 | 14.3 | 12.6 | 12.7 | 13.4 | 12.7 |
| Forest products | 26.8 | 31.4 | 26.1 | 21.4 | 18.3 | 15.8 | 11.9 | 8.3 |
| Paper, printing, publishing, and allied products | 6.1 | 6.5 | 6.9 | 6.8 | 5.5 | 7.7 | 7.7 | 7.4 |
| Leather and its manufactures | 3.1 | 3.0 | 2.3 | 0.7 | 1.8 | 1.8 | 1.9 | 3.6 |
| Iron and steel and their products ^(c) | 6.2 | 2.9 | 3.3 | 3.6 | 2.9 | 4.2 | 4.0 | 3.3 |
| Stone, clay, and glass products | 4.2 | 3.2 | 3.3 | 3.1 | 2.1 | 3.2 | 3.7 | 3.1 |
| Machinery (other than transportation equipment) | 5.9 | 6.1 | 7.0 | 6.2 | 5.8 | 3.4 | 3.4 | 1.3 |
| Nonferrous metals | 1.4 | 0.7 | 0.9 | 0.5 | 0.5 | 0.2 | 0.5 | 0.1 |
| Railroad repair shops | 3.6 | 4.9 | 4.8 | 5.9 | 7.8 | 6.3 | 4.7 | (d) |
| Transportation equipment | 2.2 | 2.7 | 3.5 | 0.1 | 2.4 | 1.1 | 3.2 | (d) |
| Miscellaneous industries | 10.1 | 10.6 | 14.3 | 20.0 | 17.0 | 19.6 | 16.2 | 17.9 |
| All industries | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

(a) Arranged in order of importance in 1937.

(b) 1899 includes data on hand and neighborhood industries, hence the figures are not comparable with 1904 and subsequent periods.

(c) Not including machinery.

(d) Data not reported for 1937.

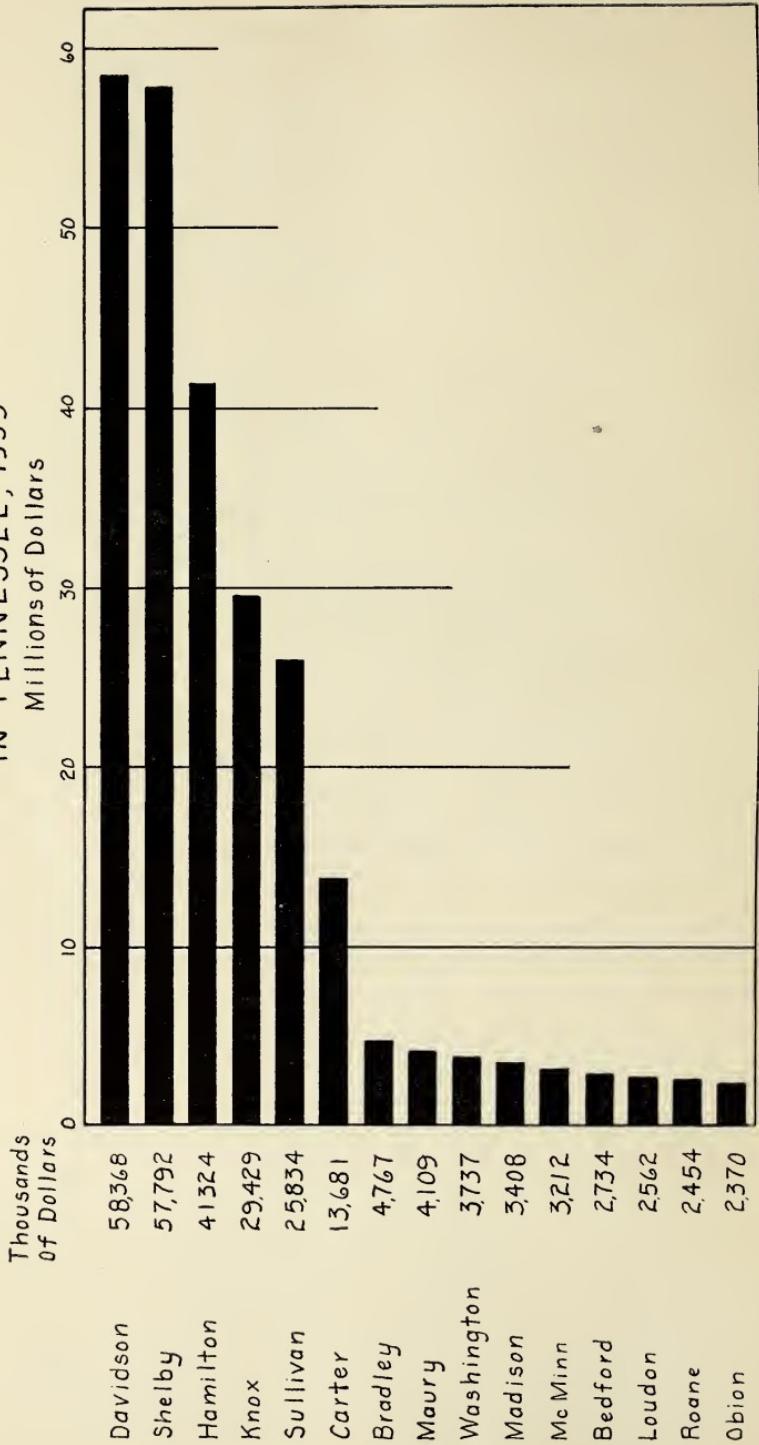
Source: Computed from data from the Census of Manufactures.

The four most important changes in the relative importance of the 12 broad industrial groups have been: (1) the decline of the manufacture of forest products, (2) machinery, (3) the marked increase in the manufacture of textiles, and (4) chemical and allied products, including rayon. Forest products accounted for 31.4 per cent of all manufacturing in Tennessee, in 1904, but this group declined steadily, relative to all industry, until in 1937 it represented only 8.3 per cent of the state total. Machinery, other than transportation equipment, also declined steadily from 7.0 per cent of the state total in 1909 to only 1.3 per cent in 1937. Other industrial groups, such as iron and steel; leather and its manufacture; stone, clay and glass products; and the non-ferrous metals showed little significant relative changes. In general they grew at about the same rate as total manufacturing in the state. Manufacturing in the food and kindred products group increased at a rate but slightly less than total manufacturing in the state, as shown by the fact that this group in 1899 accounted for 15.4 per cent of manufacturing in Tennessee, 13.9 per cent in 1909, 13.4 per cent in 1929, and 12.7 per cent in 1937. The paper, printing, publishing and allied products group has grown slightly more rapidly than all manufacturing in Tennessee.

The most marked change in manufacturing in Tennessee in the 18 years ending in 1937 was the rapid growth of the chemical and textile groups. Reference to either table shows that the manufacture of chemical and allied products, including rayon, and textiles and their products has grown much more rapidly than total manufacturing in the state. In 1899, these two industrial groups produced only 15.0 per cent of all value added by manufacture in the state and in 1914 only 17.4 per cent, but by 1929 they accounted for 29.4 per cent of the total and in 1937 reported 42.3 per cent of all value added by manufacture in Tennessee.

In fact, most of the increase in value added by manufacture in Tennessee over the last 18 years has resulted from the expansion in the chemical and textile industries. From 1919 to 1937 value added by manufacture in Tennessee increased from \$211,496,000 to \$295,-627,000, a jump of \$84,141,000. Chemicals and textiles alone accounted for \$75,759,000, or 90 per cent of this increase. Over the depression period, 1929 to 1937, value added by manufacture in the textile group showed a very small gain, but in the chemical group, value added increased \$28,327,000 against a decline of \$57,135,000 in the other 10 groups.

CHART 5

VALUE ADDED BY MANUFACTURE, 15 LEADING COUNTIES
IN TENNESSEE, 1939

Source: Biennial Census of Manufactures, 1939.

THE GEOGRAPHICAL DISTRIBUTION OF MANUFACTURING IN TENNESSEE

Manufacturing in Tennessee is so largely concentrated in a few counties that large areas in the state are without any manufacturing except a few very small plants supplying purely local markets. Out of the 95 counties in Tennessee, the Census of Manufactures in 1939 reported the number of wage earners in manufacturing for only 79 counties and value added by manufacture for only 66 counties.¹ In this year only 21 of the 79 reporting Tennessee counties reported more than 1,000 wage earners in manufacturing and only 27 of the 66 reporting counties reported value added by manufacture of more than \$1,000,000. The leading 15 of these 27 counties are shown in Chart 5 below. Aside from the 16 counties in which the number of manufacturing establishments was too small to permit the figures to be reported by the census, there were 15 counties with fewer than 100 wage earners in manufacturing and 19 additional counties with only 100 to 500 wage earners. Of the 66 counties for which data are available, 25 reported less than \$500,000 value added by manufacture. The concentration of manufacturing in a few counties of the state is strikingly brought out by the fact that in 1939 the 21 leading counties, all those with 1,000 or more wage earners in manufacturing, reported 112,073, or 85.0 per cent, of the 131,874 wage earners in manufacturing in Tennessee, while on the basis of value added by manufacture the 27 leading counties which reported value added by manufacture of \$1,000,000 or more for which data are available accounted for \$272,864,000, or 85.2 per cent, of the state total. The 15 counties which reported more than \$2,000,000 value added by manufacture reported \$255,803,000, or 79.9 per cent of all manufacturing in the state.

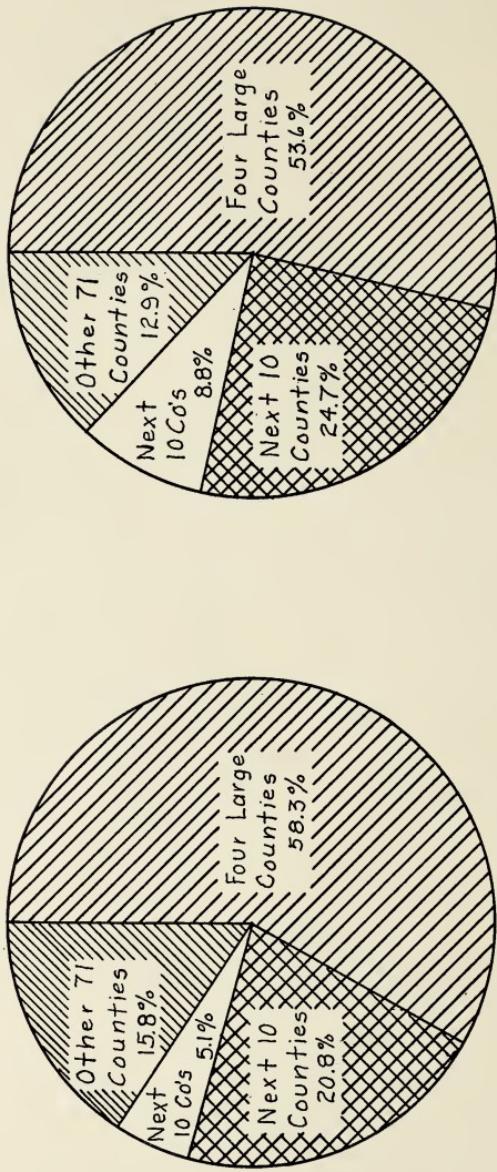
The marked concentration of manufacturing in 1939 in the four large city counties and the next 10 counties in order of size, on the basis of value added by manufacture and the number of wage earners in manufacturing is clearly shown in Chart 6. The 24 leading manufacturing counties reported 84.2 per cent of the total value added by manufacture in Tennessee, and 87.1 per cent of the wage earners in manufacturing. The six leading counties, the four large city counties of Davidson, Shelby, Hamilton, and Knox, plus Sullivan and Carter, in 1939, accounted for 70.7 per cent of all

¹For many counties the data are withheld by the Bureau of the Census "to avoid disclosing approximations of data for individual establishments."

CHART 6

VALUE ADDED BY MANUFACTURE

NUMBER OF WAGE EARNERS



Source: Biennial Census of Manufactures, 1939.

manufacturing in Tennessee. Data are not available from Blount County, but adding it to the list, it is certain that these seven counties would account for, roughly, 75 to 80 per cent of all manufacturing in the state.

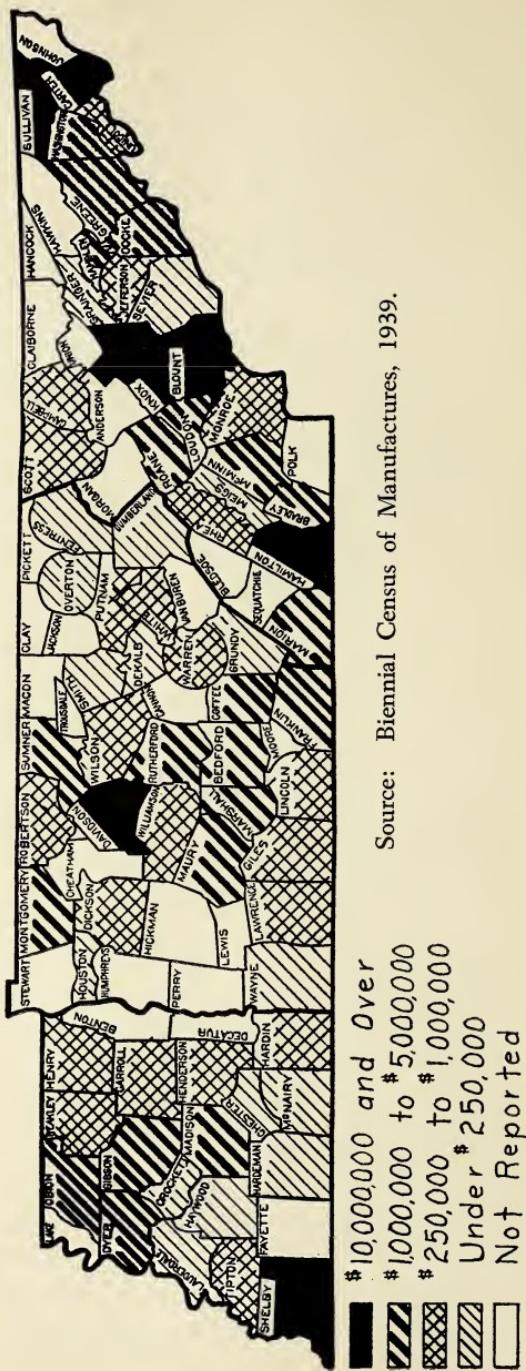
Is manufacturing in Tennessee becoming more or less concentrated in the four leading counties? The following percentages show the rate of growth of manufacturing in the four large city counties separately and as a group as compared with the rate of growth of manufacturing in the state as a whole:

| <i>County</i> | <i>Per Cent of State Total Value Added by Manufacture</i> | | | |
|----------------|---|------|------|------|
| | 1899 | 1919 | 1929 | 1939 |
| Davidson | 19.4 | 16.3 | 20.0 | 18.2 |
| Shelby | 19.4 | 23.7 | 24.3 | 18.0 |
| Hamilton | 12.8 | 18.0 | 16.2 | 12.9 |
| Knox | 8.2 | 10.2 | 10.1 | 9.2 |
| Total | 59.8 | 68.2 | 70.6 | 58.3 |

The rising percentages of the state total from 1899 to 1929 shows that manufacturing in the four large city counties together grew more rapidly than manufacturing in the state as a unit; but, from 1929 to 1939 manufacturing in the rest of the state definitely gained relative to manufacturing in these four counties.

In the recent period from 1929 to 1939, the largest gains in manufacturing were registered by the fifth and sixth manufacturing counties in order of size, namely, Sullivan and Carter, respectively. In this period, Sullivan (rayon, plastics, paper, printing) reported an increase in value added by manufacture of \$16,819,000, or 186.2 per cent, and Carter (rayon) reported an increase of \$7,481,000, or 120.7 per cent, as compared with a decline of 0.8 per cent for the state as a whole. Although figures are not available from the Census of Manufacturers, Blount County, the location of a large plant of the Aluminum Company of America, has also shown large gains. Among the 27 counties in Tennessee which reported value added by manufacture of \$1,000,000 or more in 1939, 16 counties reported percentage gains in value added by manufacture from 1929 to 1939 as follows:

FIGURE I
VALUE ADDED BY MANUFACTURE, 1939.



| County | Per cent of gain in value added by manufacture from 1929 to 1939 | Value added for manufacture in 1939 (thousands) |
|----------------|--|---|
| Sumner | 622.6 | \$ 1,635 |
| Coffee | 219.1 | 1,808 |
| Sullivan | 186.1 | 25,854 |
| Maury | 124.7 | 4,110 |
| Marshall | 120.9 | 1,712 |
| Carter | 120.7 | 13,681 |
| Bedford | 93.6 | 2,734 |
| Hamblen | 53.4 | 1,546 |
| Bradley | 33.2 | 4,767 |
| Greene | 27.5 | 1,010 |
| Dyer | 16.6 | 1,699 |
| Obion | 15.3 | 2,370 |
| Roane | 10.7 | 2,454 |
| Cocke | 2.1 | 1,111 |
| Franklin | 0.5 | 1,056 |
| McMinn | 0.4 | 3,212 |

The other 11 counties reporting value added by manufacture of \$1,000,000 or more in 1937, suffered a decline from 1929 to 1939. In this same period some of the small manufacturing counties, notably, Dickson, Giles, Hardin, Jefferson, Lincoln, and Lawrence reported significant gains in manufacturing.

As shown by the map on the opposite page the concentration of manufacturing in the eastern section of the state is striking. Ranked according to the number of wage earners in manufacturing in 1939, eight of the 10 leading manufacturing counties (all except Davidson and Shelby) were in East Tennessee. Using another measure—value added by manufacture—seven of the 10 leading counties (all except Davidson, Shelby, and Madison) were in East Tennessee. However, most of the medium-size manufacturing counties, those reporting \$1,000,000 to \$2,500,000 value added by manufacture and 1,000 to 2,500 wage earners, are located in Middle and West Tennessee.

Certain conclusions which stand out from the above analysis of the amount, growth, composition, and geographical distribution of manufacturing in Tennessee which are important in considering an industrial development program for the state are summarized below.

1. While on the basis of value added by manufacture in 1939 Tennessee ranked 17th among the states, it is still far from

being a large manufacturing state as compared with the more highly industrialized states or with the per area or per capita average for the country as a whole.

2. The rate of growth of manufacturing from 1899 to 1939 has been more rapid in Tennessee than in the United States and the thirteen southern states as a whole. From 1923, to 1939, Virginia was the only state in which the rate of growth of manufacturing was greater than in Tennessee.
3. This more rapid rate of growth has been due almost entirely to the location and growth of five or six large plants.
4. Manufacturing in Tennessee is more diversified than in any other southern state except Kentucky.
5. In terms of the broad industrial groups used by the Census of Manufactures, there has been no marked increase in the concentration of industry either in the two or in the five leading groups from 1899 to 1937. Due to the rapid growth of chemicals and textiles there has been an increase in the percentage of manufacturing in these two leading groups since 1927, but the present concentration in these two groups is no higher than in the two which were leading groups in the early part of the period from 1899 to 1937.
6. The outstanding changes have been: (1) the absolute and relative decline of industries based on forest products and (2) the rapid increase in recent years of textiles and chemicals.
7. Approximately 58 per cent of all manufacturing in Tennessee is concentrated in the four large city counties; about 15 per cent more is in Sullivan, Carter and Blount Counties; and, more than 80 per cent of all manufacturing is in the 15 leading counties.
8. There are, roughly, 65 out of the 95 counties in the state which have practically no manufacturing.
9. From 1899 to 1929 manufacturing in Tennessee was more and more concentrated in the four large city counties as manufacturing in them grew more rapidly than in the state as a whole; but, from 1929 to 1939 manufacturing in the rest of the state gained relative to these four. Sullivan, Carter, Blount, and several small counties showed marked absolute and relative gains.
10. Aside from Shelby and Davidson Counties, manufacturing is largely concentrated in eastern Tennessee.

CHAPTER III

THE NEED FOR INCREASED INDUSTRIALIZATION IN TENNESSEE

The brief analysis in the preceding chapter of the amount, growth and distribution of manufacturing in Tennessee showed that both on the basis of the amount and rate of growth of manufacturing the state compares favorably with the other southern states. In fact, in the 16 years from 1923 to 1939 Virginia was the only state in which the percent of increase of manufacturing was greater than in Tennessee. While the *rate* of increase may be high and the *amount* of manufacturing in the state very small, on any reasonable comparative basis, in 1939, only two or three southern states had a larger volume of manufacturing than Tennessee.¹

As compared with some of the more highly industrialized states in the North and East, however, Tennessee is far from being a large manufacturing state. In 1939, as shown in the preceding chapter, 16 states reported a larger total value added by manufacture than Tennessee and the same number employed more wage earners in manufacturing. Such comparisons of manufacturing between Tennessee and the other states in terms of state totals are largely vitiated, however, by the fact that area and population differ from state to state. On the basis of certain measures of manufacturing destiny which take account of area and population differences, Tennessee loses ground relative to the highly industrialized states. If the measure of density of manufacturing be value added by manufacture per square mile, as Table I in Chapter II shows, 18 states showed more manufacturing than Tennessee in 1939; whereas, if the measure of density be the number of wage earners in manufacturing per 1,000 population, 23 states ranked above Tennessee.

Admittedly, a smaller amount and density of manufacturing in Tennessee than in other states is not an effective argument for more manufacturing in the state or for any program aimed at increasing the rate of industrial growth; but it does show that, as compared with the more industrialized states, Tennessee is far behind in manufacturing. This fact certainly raises the question of whether the present position of Tennessee among the manufacturing states accurately reflects the state's natural resources and advantages for manufacturing and thus poses the question of whether that position could be improved by any reasonable industrial development program.

¹See pages 9-12.

There are, however, several forceful arguments in favor of greater industrialization in the state. There appear to be four important reasons why responsible citizens in Tennessee should devote more attention in the future than in the past to the formulation of a carefully planned long-range policy and program for industrial development. First, there is the need for further industrialization in Tennessee to provide employment and to raise the per capita income level. Second, there are several regional and state changes which are likely to affect one way or another the rate of industrial growth in Tennessee. Third, there is increased competition for new industries from other southern states, as well as states outside of the South, in the form of research and promotional activities. Fourth, the incompleteness and inadequacy of our own industrial policy and program offer opportunities for considerable improvement.

The first and second of these major reasons are considered in some detail in this chapter and the other two are examined in the two following chapters.

As was shown in Chapter II, there are, roughly, 65 counties in the state with practically no manufacturing except very small plants supplying small local markets. Employment and income in these counties are dependent exclusively upon agriculture and other raw material production. Irrespective of the demand for a larger state total, there is certainly serious need for greater diffusion of industry throughout the state. In most cases such diffusion must come, if it comes at all, through the development of new industries in these areas rather than through the movement of industry to those counties from other areas within the state.

Some communities have suffered a decline of industrial activity due to the depletion of resources, shift in the demand for type of product, and technological changes. Certain industries have declined in importance in some areas and other industries have moved elsewhere. For a number of years industries based on lumber and timber products have been declining. Exhaustion of resources and technological changes have been responsible for the near or complete abandonment of many industries based on forest products. To cite only a few instances, the closing of the blast furnaces at Rockwood after encountering high cost ores, the transfer of the railroad shops from Etowah, the decline of woodworking industries in Cookeville, the closing of the coal mines and the decline of forest products industries in Grundy County, among others, have seriously reduced industrial employment and payrolls in these areas of the state and in some cases

have created serious readjustment and rehabilitation problems.¹ In these and other areas, new industries are needed to take the place of those lost. Serious consideration needs to be given to methods of aiding the declining industries to stay in business and continue to provide employment and income. This is not to argue that given industries in particular areas ought to be saved if demand or supply, that is cost and price, conditions are such that they cannot compete. But for the declining industries, it is not only reasonable but important to raise three questions. First, are there any discoverable artificial restrictions and limitations responsible for the decline of the industry? Second, are there any feasible changes in source and type of raw materials, type of finished products, markets, methods of production or distribution which could place the industry in a more favorable competitive position? Third, if these are not feasible or sufficient, are there any other industries which could possibly be developed in the region to take the place of declining industries operating at a competitive disadvantage?

In several areas in the state additional industry of particular types is obviously badly needed to correct an unbalanced employment condition. In some towns and areas the industries employ principally women; here, more industries giving employment to men are needed. In other towns the present industries employ largely men; there are relatively few jobs for "by-product women." In still other towns the industries provide employment only for unskilled labor; consequently, there is little opportunity for the worker to obtain a more skilled job as his skill improves. Small industries employing highly skilled labor are needed in many of these areas.

In the present stage of industrial development in Tennessee, the economy is largely a raw materials one. In 1930, the latest year for which complete census figures are available, 41.3 per cent of all gainfully employed persons 10 years of age, or over, in Tennessee were employed in agriculture, extraction of minerals, and forestry and fishing, as compared with only 24.0 per cent in the same type of employment for the nation as a whole. Agriculture alone accounted for 39.3 per cent of the gainfully employed in Tennessee but only 21.4 per cent of the national total. Looking at the matter from the side of income, we find that a much higher per cent of the total income is derived from agriculture in Tennessee than in the United States as a whole.

¹The ore mines at Rockwood are being reopened and blast furnaces put into operation (April, 1941) as a result of the increased demand for iron and steel under the defense program.

Per cent of Total Income Payments from Agriculture¹

| | 1919-21 | 1929-33 | 1933-37 |
|--|---------|---------|---------|
| Tennessee..... | 25.98 | 10.22 | 13.79 |
| United States..... | 13.68 | 6.49 | 7.95 |
| Ratio of Tennessee to United States..... | 1.90 | 1.57 | 1.73 |

If we look at the matter another way, we find that income payments in Tennessee from agriculture and non-farm industries accounted for the following percentages of the United States total:

| | 1919-21 | 1929-33 | 1933-37 |
|--------------------------|---------|---------|---------|
| Agriculture..... | 2.28 | 1.64 | 2.06 |
| Non-farm industries..... | 1.03 | 1.00 | 1.11 |

These figures show that Tennessee accounts for a much larger share of the United States total income payments from agriculture than it does of the United States total from non-farm industries. All available data show conclusively that Tennessee is much more dependent directly upon agriculture as a source of income than is the nation as a whole.

Certain shifts in the demand for agricultural products also suggest that many persons formerly employed in agriculture must find employment, if they find it at all, in non-farm industries. The substitutes for cotton, such as rayon, and large increases in foreign competitive producing areas have forced a large reduction of cotton acreage in the South in recent years. There is little in the present outlook to justify the belief that this loss will be recovered. Tennessee and the South are faced with a large supply of idle or unused farm lands as a result of the loss of foreign markets for cotton. Tobacco, too, is on the wane; its production has gone beyond consuming markets. The increased use of mechanical power has gradually released large areas and thus large numbers of workers formerly employed in producing food for work animals used on the farm. Technical improvements and increased mechanization promise to reduce still further employment opportunities on the farm. If southern agriculture should improve to the point where it could support adequately the present employed, there still remain the problems of how to find em-

¹Donald S. Murray, "Income in the Southern States." A paper prepared for the sixth Annual Southern Social Science Research Conference, Chattanooga, Tennessee, March 7-9, 1940. The 1919-21 figures were computed by Murray, from the King-Leven estimates of income. Maurice Leven, *Income in the Various States*. National Bureau of Economic Research. The 1929-37 figures were taken, by Murray, from the following source: R. R. Nathan and J. Martin *State Income Payments, 1929-37*, U.S. Department of Commerce, May, 1939.

ployment for (1) those now unemployed and (2) those displaced by the continuance of the trend of changes mentioned above, such as, mechanization and competition of other products.

Tennessee's great dependence upon the production of raw materials and the cruder forms of manufacture are reflected in lower per capita wealth, income, and living standards. As was pointed out by the National Emergency Council in its report on *Economic Conditions of the South*:

The paradox of the South is that while it is blessed by Nature with immense wealth, its people are the poorest in the country. Lacking industries of its own, the South has been forced to trade the richness of its soil, its minerals and forests, and the labor of its people for goods manufactured elsewhere.¹

In spite of this wealth of population and natural resources, the South is poor in the machinery for converting this wealth to the use of its people.²

As a consequence of this fact southern incomes are low and the southerner finds the terms of trade against him.

For mining its mineral wealth and shipping it away in a raw or semi-finished form, the South frequently receives nothing but the low wages of unskilled or semi-skilled labor. The wages for manufacturing this natural wealth into finished products often do not go to southerners, but to workers in other areas; and the profits likewise usually go to financial institutions in other regions. When a southerner buys the finished product, on the other hand, the price he pays includes all the wasteful cross-hauling involved in the present system.³

Mr. John P. Ferris of the Tennessee Valley Authority makes a similar observation and points to the solution:

. . . it seems unlikely that the Southeast can have adequate income as long as it remains, so largely, a raw materials region. We must increasingly add value to our raw materials. This is accomplished as industry applies scientific knowledge, engineering brains, and labor to the raw materials.⁴

If the people of Tennessee are to obtain a higher income, raw material production must be supplemented by the establishment of more manufacturing industry and related service occupations.

In addition to our dependence upon raw material production, a large part of manufacturing in Tennessee is at an "elementary level", that is, it is devoted to the production of coarse or partially finished goods which are frequently shipped elsewhere for finishing

¹Page 7-8

²Ibid., p. 8.

³Ibid., p. 55.

⁴*Resources and Their Uses.* Speech to National Resources Committee, Chattanooga Chamber of Commerce, Chattanooga, January 15, 1940.

or further manufacturing. A relatively small proportion of manufacturing in the state consists of finely finished manufactured products which require highly skilled labor and the more elaborate technologies. On the other hand, a large part of our manufacturing employs large quantities of unskilled, or semi-skilled labor at relatively low wages. Obviously, per capita and total income from manufacturing are not as high as if manufacturing in the state consisted of a larger proportion of more highly processed products.

Tennessee's heavy dependence upon agriculture, raw materials, and the coarser grades of manufacturing are important immediate causes of the relatively low per capita income level. With 1.39 per cent of the total area of the United States, Tennessee averaged in the five years from 1933-37, according to estimates, 2.21 per cent of the population but only 1.19 per cent of the aggregate income payments of the country.¹ The following figures show the low level of per capita income in Tennessee as compared with the rest of the country:

Average Per Capita Aggregate Income²

| | 1919-21 | 1929-33 | 1933-37 |
|---|---------|---------|---------|
| Tennessee..... | \$317 | \$242 | \$247 |
| Thirteen southern states ³ | 352 | 261 | 262 |
| United States..... | 581 | 500 | 460 |
| Thirty-five states outside of the South... | 670 | 591 | 537 |

Thus, average per capita income payments in Tennessee were only 55 per cent of the United States average in 1919-21, 48 per cent in 1929-33, and 54 per cent in 1933-37. As compared with the 35 states outside of the South, average per capita income payments in Tennessee were only 47 per cent as large in the three years 1919-21, 41 percent in 1929-33, and only 47 percent in 1933-37. Even more strikingly, in all three periods, average per capita income payments in Tennessee were lower even than the averages for the 13 southern states as a whole.

The per capita income in an area depends upon (1) the level and distribution of technical training and technology, (2) the ratio of population to resources, (3) the degree to which the factors of production are employed, and (4) the allocation of the factors of production between alternative uses.

The second of these, the high ratio of population to resource utilization, is so fundamental in the explanation of low per capita

¹Murray, "Income in the Southern States," *op. cit.*; estimates by Nathan and Martin.

²*Ibid.*

³The thirteen southern states: Virginia, Kentucky, Arkansas, Oklahoma, Texas, Louisiana, Mississippi, Tennessee, Alabama, Florida, Georgia, North Carolina and South Carolina.

income in Tennessee that it deserves special consideration. This argument has been ably put by Carter Goodrich and others in speaking of the South.

The fundamental cause of the low level of living is excessive pressure of population on available resources. Extraordinarily high rates of natural increase and insufficient emigration have resulted in a rural population far greater than the agricultural, forest, and mineral resources can support satisfactorily.¹

As a direct result of low per capita income and a relatively low level of living in Tennessee, the state has been exporting population. Even though the total population of the state has increased with each decennial census (the increase from 1930 to 1940 was 299,285 or 11.9 per cent), considerable net migration has taken place. But the number of persons born in Tennessee, who have moved out of the state, exceeds the number of persons born elsewhere, who have moved into Tennessee. The essential point is that there has been a movement of population from the state greatly in excess of the movement of population to the state.

The causes of migration are many and complex, but it is pretty clear that a differential in economic opportunity has been the predominant factor in population movements out of Tennessee and the South. As the National Emergency Council concluded: "The export of population reflects the failure of the South to provide adequate opportunities for its people."² On the question of population and the great dependence of the South on raw material production, Mr. Allredge, then with the Tennessee Valley Authority but now with the Interstate Commerce Commission, noted:

This has proved too many persons for these raw material-producing activities adequately to support aid, as a consequence, these states have experienced over a number of decades a constant migration of native-born inhabitants to sections of the country offering employment at higher income levels than were afforded by the predominant production of raw materials.³

The important fact is that a steady net stream of workers is leaving Tennessee for regions which offer greater economic opportunities.

This fact is clearly shown by the data below. The figures under cumulative loss through migration represent the excess of

¹Carter Goodrich, *et al*, *Migration and Economic Opportunity*, (Philadelphia: University of Pennsylvania Press, 1936), pp. 61-62.

²National Emergency Council. *Economic Conditions of the South, op. cit.*, pp. 17-18.

³J. H. Allredge, *Industrial Resources of the Tennessee Valley and Their Commercial Possibilities*. (Unpublished paper).

persons born in Tennessee but living outside the state over persons born in other states but living in Tennessee.

| Census year | Cumulative loss through migration | Per cent of total native population born in the state |
|----------------|--|---|
| 1930..... | 458,167..... | 15.0 |
| 1920..... | 426,312..... | 15.5 |
| 1910..... | 384,788..... | 15.1 |
| 1900..... | 301,035..... | 13.1 |
| 1890..... | 277,210..... | 13.8 |
| 1880..... | 261,869..... | 14.6 |
| 1870..... | 192,145..... | 13.4 |

From these figures it appears that Tennessee not only has been shipping out its raw materials to be processed, but, also, has been sending a large supply of its labor to do the processing.

The full implications and net results of the export of population upon the population exporting region are difficult to determine precisely, but most students agree that continued population export affects seriously the wealth, income and living standards, as well as the cultural patterns of the population exporting region.

The migration of the healthy and frequently the ablest and best trained young persons tends to produce static customs and habits and reduce the rate of technological progress in the state. Because of its failure to offer as good employment opportunities as other states, the state loses many of its abler technical persons and more highly skilled workers. The bulk of the migration appears to be at, or just after, the age when workers reach the productive period. This obviously produces a higher ratio of dependents, children and older persons, in Tennessee per thousand productive adult workers than in the nation as a whole. In 1930, the population under 20 years of age comprised 43.8 per cent of the total in Tennessee as compared with only 38.8 per cent in the United States.¹ This higher percentage of youth in the population, partially the result of population export, places a heavier burden on the per productive adult worker for equivalent education and other services to youth. It means that Tennessee must support a higher proportion of its population in schools than the industrialized states.

¹This higher percentage of persons under 20 years of age is not due entirely to migration of those above this age. A birth rate higher than for the nation as a whole accounts for a large part of the difference.

The reduced number of productive workers and the transfer of wealth make more difficult the support of local institutions. Even assuming the same real income per productive worker as in other regions, this higher ratio of dependents per productive worker would result in a lower per capita income and lower standards of living. The migration of productive workers, by decreasing the population of productive age, lowers the rate of economic growth even if it does not result in an absolute reduction of wealth of the population exporting area.

Equally serious, the net migration of productive workers involves a large export of wealth from the poorer parts of the state. Tennessee "bears the expense of rearing and educating a large number of children" who leave the state just at the time "they begin to repay this cost." Other regions get these workers practically without cost. This net movement of productive workers results in a fairly large transfer of wealth from Tennessee to the states receiving this migrating population. No reasonably satisfactory measure of this loss of wealth is available, though Dr. Baker of the United States Department of Agriculture has estimated that at pre-depression prices "it costs \$2,000 to \$2,500 to rear and educate the average child on American farms to the age of 15, when he may be assumed to be self-supporting . . .".¹ It is impossible to estimate very accurately the loss of wealth from migration from Tennessee, but it is certain that the net outward population movement represents a net export of wealth. Thus Tennessee, too poor in utilized resources to provide equivalent economic opportunity for all of its productive workers, is made still poorer by the loss of wealth used to train productive workers.

There is another side to the picture, however, which must not be overlooked. Given, first, the rate of population increase in Tennessee and the present utilization of economic resources in the state, that is, the present ratio of population to utilized resources, and second, the ratio of population and resources in other states and areas, the population export from Tennessee is not a clear loss. If the real rates of return (remuneration) of equivalent labor are higher in other regions than in Tennessee, after the reduction of transportation costs, then the flow of labor out of Tennessee increases the production of economic goods and services in other regions more than it decreases their production in Tennessee. Further, if, as is maintained in this study, one reason for low per capita

¹O. E. Baker, "Rural-Urban Migration and the National Welfare." *Association of American Geographers*, XXIII (1933), p. 86.

income and low standards of living in Tennessee is the high ratio of productive population to utilized resources, then a reduction in this ratio through the migration of productive workers would raise the real income per productive worker left in Tennessee. As long as there is a differential real income to an equivalent unit of labor in other regions as compared with Tennessee, the migration of productive workers from Tennessee raises the real income per capita of the workers remaining in the state beyond what it would be if there were no migration. It is this economic benefit from migration which must be balanced against the loss of wealth from exporting productive adult workers. Without migration, greater over population relative to resources in Tennessee probably would have been the result.

Insofar as low per capita income in Tennessee is the result of a high ratio of population to developed resources—and there can be little doubt that it is one if not the fundamental cause—per capita income may be raised by proper adjustments on either side of the ratio. First, the ratio of population to resources may be reduced by a reduction of population through control of the rate of increase—birth control and migration. Second, the ratio of resources to population may be raised by the greater utilization of resources and the importation of capital.

Students of population and economists have given much thought to raising per capita income in depressed or subnormal areas through the adjustment of population to resources. Most frequently they have sought this adjustment through the first method, namely, a reduction in population through migration and birth control. Such an attack upon the problem is important and in the right direction. In many cases all or most of the adjustment in the ratio of population to resources must be made from the side of population alone. It is equally important, however, to determine if the other blade of the scissors—the development of resources—is doing its share of the cutting. In the attempt to increase income and economic levels of living careful attention should be given to the possibilities of increasing the ratio of resources to labor through (1) the movement of capital and technology into the region and (2) the more complete discovery and effective utilization of resources.

Raising income levels through birth control and migration in a democratic system with given prejudices and inertia is likely to be extremely slow and only partially successful. In Tennessee at present there is little effort to make birth control information effective for persons in those areas of the state where the rate of popula-

tion increase is most rapid relative to available economic resources. Even assuming immediate effective birth control, which is far from realization either in terms of the existing or any foreseeable program, the rate of increase of productive adult workers is largely determined for 15 to 20 years by the children already born in the state. Aside from widespread increase in mortality rates from war, epidemics, etc., population reduction in the next decade or two must come, if it comes at all, through migration.

Migration in many cases is only a partial and, as we have seen, in many respects an expensive and undesirable solution. The export of the better trained productive workers tends to produce static conditions, reduces the rate of technological progress, results in a serious loss of wealth embodied in exported adult productive workers, makes more difficult the maintenance of service institutions and reduces living standards of the local population by increasing the number of dependents per productive adult worker. Furthermore, in the past migration has been too slow to equalize the return to labor of the same skill in the same occupation in Tennessee and elsewhere as is strikingly evidenced by the existence of differentials in wage and income levels. The imperfect mobility of labor due to home ties, lack of knowledge of opportunities, financial ability to move, etc., is well known and raises serious questions as to whether migration can be increased sufficiently by appropriate measures to raise significantly income levels in many areas of the state. In view of existing income differences for equivalent labor in Tennessee and in other regions, more attention should be given to the possibilities of increasing the mobility of labor. Yet it must be remembered that in general it is the least skilled workers, those on the lowest economic level, who need to move most, who are least likely to move.

The attack upon the problem of low per capita income in terms of raising the ratio of resources to population through the negative process of birth control and migration offers at best an extremely slow and only partial solution. This conclusion would seem to argue forcefully for every reasonable effort to increase per capita income by increasing the utilization of economic resources, such as some program aimed at more complete discovery and development of resources and the establishment of industries for processing Tennessee raw materials through higher stages.

As for raising income through industry, students of the problem in Georgia suggest four possible means.

In general there are four ways of increasing our net income:
(1) by initiating production or increasing our output of those

goods in which we have a cost advantage over other producers; (2) by increasing the quality or marketability of those goods which we offer for sale; (3) by carrying production through more advanced stages, and (4) by financing, and managing our own enterprises.¹

Industrial development increases the income of a community through: (1) payments for labor and materials used in the construction of the plant, (2) the increased payroll from operations, (3) payments for locally produced raw materials, and (4) the secondary effects on services, trade, and allied industries created by the expenditure of the larger payroll and raw material receipts. In some cases, of course, all four ways may not operate. For example, the new industry may use an old plant or all raw materials may be bought out of the state. In all cases, the four ways produce varying relative effects upon the total income stream of the community. In the case of local industries using farm products the increase in income is effectively diffused through the surrounding agricultural area.

It is not the purpose of the present discussion to point out specifically how the ratio of resources to population can be increased, or even less, to argue that the ratio, in every case, can be effectively increased. The immediate discussion has a two-fold purpose. First, it is intended to show that real income per productive worker can be raised by an increase in the ratio of effectively used resources to population. Second, the position here is that since in the first place a reduction of population through birth control and migration is slow, only partially effective, and on many counts undesirable, and in the second place, since Tennessee has large undeveloped resources careful attention should be given to the formulation and execution of a program designed to increase the ratio of resources to population by more complete discovery and effective utilization of our resources. Specific suggestions for such a program are presented in the last two chapters of this work.

¹Dr. J. E. Hedges and Harold G. Murphy, *Commerce and Industry*, Citizens Fact Finding Committee of Georgia (December, 1939), pp. 7-8.

CHAPTER IV

INDUSTRIAL DEVELOPMENT PROGRAMS IN COMPETITIVE STATES

In Chapter III it was argued that Tennessee should give more serious attention than is now being given to the formulation and execution of an industrial development program for the state. In that chapter two major reasons were advanced, namely, first, the need for greater industrialization in Tennessee to provide employment and raise the per capita income level, and second, certain important changes in the state and region which increase the necessity of deliberate efforts to develop and attract industry to the state. A third major reason why Tennessee should give more serious consideration to the problem of industrial development in the state in the future than it has in the past lies in the greatly increased efforts of competitive states to attract industries.

The Council of State Governments reports that in 1939 appropriations for advertising and industrial development programs were made by 39 states.¹ The number of states making appropriations for such programs has increased rapidly in recent years.

In 1933 six states were appropriating funds for advertising purposes. By the end of the 1935 legislative sessions, seven more states had joined the ranks; with the addition of nineteen states by the end of 1937 sessions, a total of 32 states were competing through advertising media for tourists, industries, residents, investors and markets for their agricultural products.²

In the 1939 sessions eight additional states joined the ranks, as Oklahoma abolished its program, bringing the total to 39 states. For the 1940 fiscal year these states appropriated approximately \$3,000,000 for advertising.

The aim of the programs differ from state to state, but these advertising and promotional programs have in general five main objectives:

1. The development of the tourists' business
2. The attraction of home owners
3. The increase of markets for agricultural products
4. Attraction of investors
5. The expansion of industry.

While in every case these state advertising and promotional programs were designed to increase tourist travel, it should be noted that 32 of

¹The Council of State Governments, *Advertising by the States* (March, 1940).

²*Ibid.*, p. 3.

the 39 state programs had as their purpose the attraction of industry to the state.

What accounts for the greatly increased efforts of the states to attract tourists and new industries and to increase the markets for their agricultural products? As the previous discussion shows, most of the increased activity appears to have come since 1933. Doubtless some of the increase from 1933 to 1939 has been due to the revival of various programs discontinued in the economy move from 1929 to 1933 as state revenues declined. But the inauguration of advertising and promotional programs in most of the states has been hastened if not caused by the depression, according to a survey by the Council of State Governments.¹ The increase of unemployment and the decline of state revenues, associated with the declining volume of business during the depression, were important factors in the rapid extension of state campaigns aimed at increasing income through more industry and tourist trade and the improvement of markets for products. There were, however, other important factors. The migration and decentralization of industry, the loss of foreign markets and the decline of important industries in particular regions, the development of new industries which use new types of raw materials such as the chemical industries including synthetic fibers, the exhaustion of resources in some areas and the discovery and greater availability of raw materials in other areas, as well as the spirit of competitive emulation have played important roles in the rapid expansion of state industrial development programs. It is highly probable, also, that some programs have been accelerated by success stories of particular towns, small regions, and other states, in securing new industries through research, advertising, and promotional work.

In the older industrial states threatened with a relative if not absolute decline of industry through the migration of particular industries, the state programs have been aimed very largely at keeping and expanding existing industries. In those states in regions which show industrial gains relative to the nation as a whole, the state advertising and promotional programs appear to have been motivated largely by the desire to get as much as possible of the migrating or expanding industries while the movement is taking place. Other states, dependent largely upon agriculture and other types of raw material production, have adopted programs to raise income through the development of local industries and the attraction of expanding or migrating industries.

¹Ibid., p. 3.

These various programs for industrial development have been based on the fact that the actual location of a large volume of new industry is dependent upon the choice of industrialists between alternative locations in different states. For a number of plants, certainly in several types of industries, total per unit cost of production and marketing, as accurately as they can be estimated, are equal in a number of possible locations. In such cases the place of final location is *sold* to the industrialist. Even in the case of unique industrial locations the possibility of securing an industry for that location depends upon the accurate and detailed data on locational factors placed in the hands of the decision-making industrialist. An industrialist cannot locate in the "best" location if he does not know about it. Industrial development programs have been set up in the several states for the purposes, first, of reducing the probability that prospective industrialists may overlook unique locations in these states and, second, in the case of equal cost advantage locations, of *selling* the industrialists a location in these states. Securing new industries for a state in a large number of instances is a competitive job of outselling neighboring states as witness the efforts of the states which have any chance to obtain the new plant any time the intention to build one is announced.

In recent years several southern states have been setting up organizations and developing plans to make more effective their efforts to obtain new industries. In 1937 North Carolina reorganized the Division of Commerce and Industry for the purpose of industrial research and the promotion of industry in the state. An annual appropriation of \$125,000 was made for two years, and in 1939 an appropriation of \$100,000 annually was made for two more years for advertising the state's industrial resources and advantages. Louisiana, in November, 1936, created a Department of Commerce and Industry and appropriated \$50,000 per year in 1936 and 1937. In Georgia, The Citizens Fact Finding Committee and the privately sponsored Industrial Development Council have been active in research and promotion work. In 1940 Virginia received a grant of \$90,000 from one of the foundations for industrial research looking toward the development of industry. Texas has set up a twelve-point program designed to increase the rate of industrial development. In 1936 Mississippi started its BAWI (Balance Agriculture With Industry) program and in 1938 Arkansas set up the Arkansas Agricultural and Industrial Commission to encourage the development of new industries within the state.¹

¹Mississippi's BAWI program ended June 1, 1940.

In view of the competitive scramble for new industries, the development of state-wide industrial development programs in other states becomes a powerful argument for an effective program in Tennessee. Because of this fact, in the rest of this chapter we examine briefly some of the programs in other states. It is not intended to present here a careful and detailed analysis of all the state industrial development programs. The reason for considering these programs at all is threefold. First, a knowledge of what is being done in other states is basic to a careful appraisal of the program in Tennessee. Second, a study of the programs in other states may suggest improvements in the present program in Tennessee. Third, the industrial development work in competing states is a powerful argument for the formulation of a more effective program in Tennessee. In line with these purposes this discussion is purposely limited to a few representative programs.

The discussion of the several state programs is organized under the following heads:

1. Types of organization
2. Activities and functions
3. Results.

TYPES OF ORGANIZATION

Programs for industrial development in the several states range from those with highly unified, state-wide programs with large financial support to others which have largely a paper program. Likewise, the organizations for carrying out the programs for industrial development vary widely from one state to another. These agencies range all the way from state-wide chambers of commerce, citizens committees, and state planning boards, to divisions of the existing state departments, and independently organized state departments of commerce and industry. In general, the following more or less distinct types of organization exist with considerable variation from one state to another:

1. A state-wide chamber of commerce,
2. Citizen's committees, serving without pay
3. Boards, committees, councils, etc., consisting of government officials (heads of various departments) and private citizens.
4. State planning boards or commissions
5. Some combination of the state planning board and one or more promotional agencies

6. A separate division created in an existing state department such as the department of conservation, or commerce and industry, or industry and agriculture,
7. A separate department of commerce and industry created solely for the purpose of industrial development.

In a number of the states different parts of the industrial program are carried on by different agencies. In Alabama, for example, the research and fact finding part of the program is performed by the state planning commission, several state departments, and co-operating educational institutions; state advertising is carried on by the State Bureau of Publicity and Information in the Highway Department; and the promotional work, which itself involves considerable state advertising, by the state-wide chamber of commerce. State chambers of commerce or else chambers of commerce in key cities handle most of the industrial promotion work in many other states, for example, Florida, West Virginia, and Delaware.

The majority of the state industrial development programs, however, are headed by some citizen group of committees, boards, councils, or commissions appointed by the governor. These bodies are independent of other governmental agencies. The Connecticut Development Commission, organized in 1939, is rather typical. "It is composed of eleven private citizens, representing the various business and economic interests of the state, and including at least one representative from each county, one representative of labor and one representative of agriculture. There are no public officials on the Commission, which is an independent agency."¹ The Kansas Industrial Development Commission, established in the same year, is likewise an independent, non-partisan agency "composed of nine private citizens appointed by the governor to represent the social, economic and geographic composition of the state."² Similarly, the industrial development programs in Illinois, Arkansas, Minnesota, Ohio and Rhode Island, are headed by councils, boards, commissions, etc., varying from six to 24 private citizens. The Illinois Development Council, formed in 1939, consists of 24 private citizens representing economic and business groups throughout the state. The Arkansas Agricultural and Industrial Commission is composed of seven private citizens, one of whom is executive director; the Minnesota Resources Board has 12 members; Ohio, six; and the Rhode Island Industrial Commission, seven. In all cases, these non-partisan boards representing the various social, business, and economic groups

¹*Advertising by the States, op. cit.*, p. 11.

²*Ibid.*, p. 14.

and geographic sections of the state are independent of any departments of the state government.

A slight variation of the above is found in at least two states where the industrial development council is composed of private citizens plus the heads of various related state departments. The Massachusetts Development and Industrial Commission consists of five private citizens appointed by the Governor plus the Commissioner of Labor and Industries and the Commissioner of Agriculture. The New Jersey Council, the state development and promotional organization, is composed of the heads of 20 state-wide organizations and departments of the State Government. In addition there is an advisory board consisting of seven other heads of the state-wide organizations and state Departments plus the Governor. The New Jersey plan calls for the formation in each community of a local industrial development committee representing labor, management, government, finance, education and civic life.

As far as the author has been able to learn, the program of industrial development is handled directly, or even largely, by the state planning commission in only one state, namely, Colorado. In several states, however, this agency cooperates in furnishing information and clerical assistance to the agency for industrial development. In New Hampshire the work generally performed by a state planning board and an industrial development agency are combined in the State Planning and Development Commission.

At least four states have established separate divisions or departments of commerce and industry for the sole purpose of industrial development. In 1939, Pennsylvania established the Department of Commerce as an independent agency "to promote industry, expand markets, encourage tourist travel, and prepare a planning program for Pennsylvania."¹ Indiana, likewise, has established a Department of Commerce and Industry to promote industrial development. Louisiana is a third state which has created a separate department for industrial development. The Department of Commerce and Industry, an independent agency composed of 12 members serving without pay, plus the Governor, was established by popular vote in 1936 to promote industrial and commercial welfare of the state, and especially to attract new industries. The General Assembly in North Carolina, in 1937, reorganized the Division of Commerce and Industry because of, "first, the pressing need for an agency equipped to service industrial inquiries and to work with the various towns, cities and the public utilities in locating new industries in the state; and,

¹Ibid., p. 25.

second, the decision of the state to launch an advertising program, one important phase of which was to be the promotion of North Carolina as an outstanding state for industrial development."¹

The organization for industrial development most frequently employed by the several states is a non-partisan council of private citizens representing the social, economic, business, and geographic interests of the state. When this type of organization exists, the work of the council consists of the formulation of policies, the planning of the broad outlines of the industrial development program, coordinating the work of existing agencies, and selling the program to the citizens of the state. The technical work of research, promotion and advertising under this type of organization is generally done partly by a technical staff located at the state capital, but largely by cooperating public and private research and promotion agencies and local groups in the state.

FUNCTIONS AND ACTIVITIES

Detailed discussion of the industrial development programs of particular states is beyond the scope of this short study, but a brief examination of the more common activities under these programs in various states is presented here. With considerable variation from program to program, the several state industrial development programs include the following activities:

- I. Research and fact finding
- II. Advertising
- III. Promotion
- IV. Public education
- V. Statement of industrial policy.

Not all of these activities are included in every state industrial development program, and, even in the case of the activities which are included, the emphasis differs from one program to another. Let us examine some of the specific activities under these broad functions of a few of the representative state industrial development programs.

I. RESEARCH AND FACT FINDING

The collection and analysis of detailed data on resources, industries and industrial opportunities in the state is basic to every one of the state programs. For example, the "collection of industrial data and their preparation in factual form to present to pro-

¹*Seventh Biennial Report of the Department of Conservation and Development, North Carolina (1938)*, p. 34.

spective industrialists is one of the most important jobs" of the Division of Commerce and Industry of North Carolina. In co-operation with the State Engineering Experiment Station at the Georgia School of Technology, the Industrial Development Council of Georgia, a privately financed organization, is conducting research to determine the types of industries which have particular advantages in the Southeast, after which they propose to "develop detailed economic and technological prospectuses establishing a sound background for the use of individuals and groups contemplating the establishment of plants of that particular type."¹ In Virginia, a grant of \$90,000 has been given to the Institute of Industrial Research, the Planning Commission of Virginia, and the Virginia Polytechnic Institute for research on resources, industry and labor which is considered basic to a program of industrial development.

The Kansas Industrial Development Commission, created "by act of the legislature of 1939 as a non-partisan body for 'fostering and promoting the industrial development and economic welfare of the state,'" and provided with an appropriation of \$60,000 per year for the first two years, was definitely charged with the duty of "collecting all pertinent information available regarding the industrial opportunities and possibilities of the state of Kansas, including raw materials, and products that may be produced therefrom; power and water resources; transportation facilities; the available markets, and the marketing limitations of the state; the availability of labor; the banking and financing facilities; the availability of industrial sites; and the advantages of the state as a whole, and the particular sections thereof, as industrial locations, and such other fields of research and study as the commission may deem necessary."² As another example of a specialized kind of research, the Connecticut Development Commission is compiling and maintaining a file of idle industrial plant facilities and available industrial sites. Similar work is being done by the New Jersey Council.

In addition to the collection of data on resources and other locational factors, most industrial development programs provide for research on the present industrial structure of the state. The Industrial Development Committee of the New England Council collects data on existing industrial structure in order to:

1. Determine wherein it is strong and weak. Examine it for too many industries of like nature, and industries subject to heavy seasonal fluctuations or prolonged slack seasons.

¹Letter to the author from Joseph B. Hosmer, April 15, 1940.

²From the Act creating the Commission.

2. Determine what industries are needed or desirable as auxiliaries of, or suppliers to, present industries.
3. Determine what new industries are developing that can operate successfully in the community, considering the advantages as determined by the survey mentioned.¹

In Virginia, the Institute of Industrial Research is carrying on investigations to determine what industries would best fit in with a desirable industrial pattern. As pointed out above, in Georgia, the Industrial Development Council, through the State Engineering Experiment Station at the Georgia School of Technology, is pursuing "detailed economic and technological" research in those industries which might locate in Georgia with the view of compiling prospectuses for the benefit of industrialists "contemplating the establishment of plants of that particular type."²

Several of the states, for example, Connecticut, New Jersey, and Arkansas, are conducting research on state and local taxes, laws and regulations to discover what factors, if any, are likely to prevent (a) the profitable operation and growth of present manufacturing establishments, and (b) the state and communities from securing new industries.

II. ADVERTISING

Research is necessary to provide the detailed data on the locational factors to be considered by an industrialist in choosing a location, but advertising and promotion are essential to contact the industrialist and sell him on a location in the state. Consequently, most of the state programs for industrial development provide appropriations for advertising and promotion.

Through the State Advertising Program with an appropriation of \$125,000 per year for the 1937-1939 biennium and \$100,000 per year for the 1940-1941 biennium in cooperation with the Department of Conservation and Development, North Carolina has been carrying on an advertising campaign in a group of "national magazines with a high executive readership" and having "a circulation per issue of 3,500,000" aimed at the expansion of industry to utilize the state's raw materials.³ Pennsylvania is conducting an advertising program aimed at influencing new industry to locate in the state. As further examples, the New Jersey Council is

¹New England Community Statistical Abstracts. Bureau of Business Research, Boston University, College of Business Administration, October, 1939.

²Letter to the author, April 15, 1940, by Joseph B. Hosmer, industrial economist in charge of the work at the Georgia School of Technology.

³Seventh Biennial Report, *op. cit.*, p. 135.

spending \$100,000 a year for advertising, while for the two years ending June 30, 1941, Illinois is spending \$250,000 for publicity and promotion.

III. PROMOTION

Through advertising, through personal contacts and through the help of public utilities, chambers of commerce and other organizations, the various states build up a list of industrial prospects which they attempt to locate in the state. Other states contact directly manufacturing concerns which are contemplating expansion or migration and try to induce them to locate the new plants within their borders.

Once a request for information is obtained from an industrial prospect in response to the advertising program or other means, most of the state industrial development programs are prepared to provide detailed information on locational factors quickly rather than let the prospect go elsewhere because his initial inquiry goes unnoticed on the desk of some state agency unprepared to give any adequate answer.

The direct promotional work under the North Carolina program has been described as follows:

One of the most important phases of industrial promotion is the extensive follow-up of all inquiries made by the Division. In addition to supplying all available information requested, the Division makes a special point of servicing the inquiry with additional data as often as it is thought advisable to do so. This procedure has resulted in interesting some firms in North Carolina that originally expressed no desire to move to the State.

If it is at all possible, after a prospect has manifested a desire to know about the State, a personal visit is made at his office. Although the time for such calls is limited, a number have been made with very satisfactory results. The Division has been fortunate in being able to call upon representatives of the utilities—railroads and power companies—to make a number of these personal calls.¹

North Carolina also employs an industrial agent to follow up leads and induce new industries to come to the state as well as "dissuade any present industries within the state from moving elsewhere."

IV. PUBLIC EDUCATION

In a number of states the industrial development programs include educational campaigns to acquaint the public with the

¹*Ibid.*, p. 36.

specific industries in the state, to show the importance of industry to the welfare of the state in terms of employment and income, to create a more favorable attitude toward industry, and to encourage cooperation between the industries and the people of the state. By making voters, legislators and governmental officials aware of the economic benefits of industry, these public education programs seek to secure and maintain controllable conditions favorable for the location and growth of industry.

Some of the older industrial states in particular, such as, Pennsylvania and Massachusetts, attempting to maintain their position in the face of the growth of newer industrial areas, carry on advertising and educational programs designed to "acquaint the manufacturers within the state of the advantages they enjoy." In addition to this, a number of the states, such as, Pennsylvania, Massachusetts, Kansas and North Carolina, provide various services for manufacturers already within the state aimed at making them more successful and eliminating difficulties and troubles which may cause them to move away. These services generally take the form of information supplied by the industrial development research agency, public institutes and clinics for industry, particularly those in difficulty or in danger of leaving the state. A major part of the work under many of the industrial development programs is directed toward the maintenance and growth of existing industries. As the Industrial Development Committee of the New England Council points out:

The maintenance of present industries is the major part of any local industrial program. It is futile to try to secure new industries if local conditions are unfavorable to the growth and expansion of present establishments. The committee should hold a joint meeting with representatives of all local industries as a means of:

1. Ascertaining what, if any, factor in the community or state are obstacles to the profitable operation and growth of present manufacturing establishments.
2. Determining what factors, in the opinion of present local industrialists, may militate against securing new industries¹

Finally, one purpose of the public education aspect of industrial development programs is to secure public support of the programs by pointing out the economic benefits to be derived from new industry.

¹New England Community Statistical Abstracts. Bureau of Business Research, Boston University, College of Business Administration (October, 1939) p. 8.

V. INDUSTRIAL POLICY

It hardly appears essential to the discussion to indicate the types of policies adopted or the states which have adopted them. It is enough to point out that, almost without exception, those states which have set up an industrial development program have given considerable attention to the problem of a desirable industrial pattern and to the formulation of industrial policies believed essential in moving toward that pattern. Certainly the process of thinking the problem through to determine what constitutes a desirable industrial pattern, the setting of objectives, and the careful consideration of public policies to achieve those objectives, appears to be a distinct gain as compared with leaving industrial development to chance efforts on the part of competitive groups.

THE PROMOTION IN NORTH CAROLINA

Since North Carolina has one of the most complete and active industrial development programs in the South, let us look briefly at the set up there to see how these various activities are tied together. In 1937 the General Assembly reorganized the Division of Commerce and Industry into an active agency for research and the promotion of industry within the state. According to the report of the Division:

Two factors were responsible for the reorganization of this division into an active departmental agency: first, the pressing need for an agency equipped to service industrial inquiries and to work with the various towns, cities and the public utilities in location of new industries in the state; and, second, the decision of the state to launch an advertising program, one important phase of which was to be the promotion of North Carolina as an outstanding State for industrial development.¹

According to this same report:

The work of the Division of Commerce and Industry may be divided into three distinct phases; the preparation of industrial data pertaining to specific localities found to be suitable for certain types of manufacture, the development of prospects who might be interested in the advantages of these localities, and actual personal efforts to locate the prospect in North Carolina.²

The preparation of industrial data is described briefly as follows:

The collection of industrial data and their preparation in factual form to present to industrial prospects is one of the most important jobs of the Division. The amount of detail work required to supply a prospect with adequate information to present a com-

¹*Seventh Biennial Report of The Department of Conservation and Development of the State of North Carolina. Biennium ending June 30, 1938*, p. 34.

²*Ibid.*

plete picture of the locality under consideration is frequently a large task. It involves in some cases vacant building specification, equipment, financing, etc., and in others new construction. In all cases there are such details as transportation facilities, power and rates, taxes, labor supply, water, raw materials, and markets, to be considered.¹

The Division has, with the aid of cities, towns, utilities, and chambers of commerce, been able to obtain a list of vacant manufacturing properties in the state that are available for new enterprise. In many cases maps, drawings, and other necessary items have been collected and placed on file. A number of outstanding industrial sites now developed have been surveyed and all data concerning these sites placed on record. Efforts have been made to determine the amount of financial aid various towns and cities could lend to new industrial enterprises that might desire to locate there.²

The advertising program, for which an appropriation was made of \$125,000 per year for the 1937-39 biennium, and \$100,000 per year for the 1939-41 biennium, is handled by a special Advertising Committee in cooperation with the Department of Conservation and Development. The primary objectives of this advertising are: (1) the development of tourist business; (2) the expansion of industry to utilize the raw materials of the state; and (3) the attraction of homeseekers. Through the advertising program "the industrial advantages of North Carolina have been presented, not only in General Magazines, but through industrial Trade Magazines, carrying a special message to the executives of specialized industries."³ The group of "national magazines with high executive readership" has a "circulation per issue of 3,500,000."⁴

In addition to inquiries coming to the Division from the advertising program, industrial prospects are secured in a number of other ways, such as, "personal contacts" and through "public utilities, chambers of commerce and others."

Requests for general industrial information are answered promptly by sending general published data, and this is always followed up later by specific data designed to fit the exact needs of the prospect.

As the Division report points out:

One of the most important phases of industrial promotion is the extensive follow-up of all inquiries made by the Division. In addition to supplying all available information requested, the Division makes a special point of servicing the inquiry with additional data as often as it is thought advisable to do so. This procedure has resulted in interesting some firms in North Carolina that originally expressed no desire to move to the State.⁵

¹Ibid., pp. 34-35.

²Ibid., p. 35.

³Ibid., p. 136.

⁴Ibid., pp. 136-137.

⁵Ibid., p. 35.

Where it is possible to do so the Industrial Engineer or some representative makes a personal call on the industrial prospect to provide him with more detailed data and to learn more about his own needs.

In locating the prospect in North Carolina:

The Division has followed a policy here that seems to be very effective—that of having the prospect himself, or his representative come to the State to look over the various available sites and buildings. In addition to giving the prospect a better idea of what North Carolina has to offer, this procedure also gives the various towns and cities to which the prospect is taken the opportunity to know the man with whom they may deal, and to understand better his requirements.¹

Although the Division does supply detailed information about the state and various locations, it does not attempt to make any final decision as to where a prospect should locate. This is left for the prospect to decide. In this connection, however, prospects who are made known by utilities are supplied with information about sites and locations in the areas served by these utilities. Such a policy must be followed, as the prospect was developed by some private agency interested in the industrial growth in its own section, unless investigations prove the territory served by the utility is for some reason not suitable and the utility releases the Division. In such cases the Division is free to show other sections.²

Obviously, many details of the program cannot be considered in this limited space.

RESULTS

What about concrete results from these various state programs? Accurate measurement of results is almost impossible; hence, this question can be answered only in terms of the claims of the various agencies. While recognizing the possible errors in the figures, let us look at some of the reported results.

The Department of Commerce of the Commonwealth of Pennsylvania established in June, 1939, "to promote business and industry within the state" and "to encourage the location of new businesses" claimed the following results of the first eighteen months of its work:

1. More than 350 new industries were established in Pennsylvania from January 1, 1939, to November 1, 1940, providing employment for more than 30,000.
2. Industrial migration from the state was almost completely curbed.
3. Industrial and utility construction started or scheduled in Pennsylvania in 1939 exceeded \$200,000,000—a figure larger than for any other state.³

¹Ibid., p. 36.

²Ibid.

³Business Week, March 15, 1941, p. 30.

The New Jersey Council reported the following results of the first year's advertising:

1. 1,348 new industries started operations in New Jersey in 1938 as against 1,250 in 1937.
2. 6,480,000 advertising messages featuring the economic advantages of New Jersey for plant location were placed before the major business executives of the Country.
3. Thousands of dollars worth of publicity on New Jersey as a favorable place for plant location was secured (space that cannot be bought).
4. Greatly increased industrial development effort on the part of railroads, utilities, county and municipal industrial commissions and local Chambers of Commerce and Real Estate interests.
5. Greater appreciation on the part of New Jersey's citizens as to the importance of industry to New Jersey.¹

The Division of Commerce and Industry of North Carolina reported the establishment of 85 new concerns and additional capital for 52 existing ones involving a total of \$7,000,000 new capital during the first eight months of 1938. During 1940, the Division claimed 61 new industries plus 91 additions to old industries. The 1940 figures add up to a total of, roughly, \$10,000,-000 of industrial construction contracts, 10,000 new employees and an addition of \$8,500,000 to the annual payroll.²

Recent results are not available, but the Department of Commerce and Industry of Louisiana claims that in the two years from 1937 to 1939 its activities were instrumental in bringing to the state 225 new industrial establishments, with \$50,000,000 in new capital and jobs for 20,000 persons. Through December, 1939, Mississippi claims an increase, under its program, of 3,000 jobs and \$2,000,000 in annual payrolls.

The important fact is that many of the states, particularly southern states, have integrated state-wide programs under the direction of some central unifying agency provided with appreciable appropriations for developing industrial resources and attracting new industries to the state. If one remembers that a large part of new industry may choose between equal cost advantage locations in different states, the operation of state-wide programs for industrial development in competitive states is a powerful argument for careful examination and appraisal of the existing program for industrial development in Tennessee.

¹The New Jersey Council, *More Jobs For New Jersey*.

²*Business Week*, March 15, 1941, p. 32.

CHAPTER V

THE PRESENT INDUSTRIAL DEVELOPMENT PROGRAM IN TENNESSEE

In contrast with such centralized and integrated state-wide programs of industrial development in competing states as were examined in the preceding chapter, in Tennessee there is no single state department or state-wide agency set up and financed for the primary purpose of promoting industrial development in the state. Instead, the following public and private agencies are working more or less independently, and even in some cases competitively, on various aspects of industrial development either for the state as a whole or for particular localities:

1. The Tennessee Department of Conservation
2. The Tennessee Division of Geology
3. The Tennessee State Planning Commission
4. The Tennessee Valley Authority
5. The University of Tennessee
6. Chambers of commerce
7. Industrial committees, business groups and civic clubs in small towns
8. Railroads
9. Private power companies.

In the following pages we examine very briefly the principal activities of these several organizations which are directed toward industrial development in the state, primarily for the purpose of comparing the present program in Tennessee with programs in other states.

THE DEPARTMENT OF CONSERVATION

Outside of the activities of the Division of Geology, the Tennessee Department of Conservation carries on but little work which is aimed directly at promoting industrial development in Tennessee. For the four years ending July 1, 1941, the Division of Information in the Department of Conservation has received \$100,000 per year for advertising and publicity; but, consistent with the purpose for which this Division was created, these funds have been used primarily to attract tourists, and only to a minor extent to attract industry to the state. There is at present no organized program or available funds for advertising the state's

resources and industrial advantages. The Commissioner of Conservation and the personnel of the various divisions in the Department of Conservation are doing what they can within the limits of their present budget and personnel and are cooperating as far as possible with individual groups, chambers of commerce and the Tennessee Conference Board in their individual industrial development work. As the various divisions are now organized and restricted by lack of funds there is little opportunity for effective industrial development work in the Department of Conservation, except in the Division of Geology.

THE DIVISION OF GEOLOGY

The most extensive work on industrial development carried on by any of the branches of the state government is that in the Division of Geology. According to Dr. Walter F. Pond, State Geologist, research or activities in the field of industrial development is divided into three major fields as follows:

1. Geological and mineral work
2. Work on water resources
3. Mapping.

The scope and purpose of this discussion does not permit detailed consideration of the specific activities under each division, but let us examine some of the representative types of work under each of these major fields of activity.¹

The chief work of the Division in the geological and mineral field consists of the following:

1. Pure geological research

This basic research provides "the background with which the economic or mineral geologist may study mineral deposits, determine their associations, mode of occurrence, and rocks in which they are most apt to be found and then show on his maps where to look for new deposits, and draw up rules for prospecting so new deposits may be found with the least effort and cost"

2. The analysis of "samples of the bits of ground up rock or 'cuttings' from wells drilled for oil or water"

Dr. Pond points out: "In this way a log of the well will show the thickness of each formation, giving definite knowledge of the subsurface geology rather than inferences from distant croppings"

3. Analysis of minerals, such as, coal, clays, phosphate rock, manganese, shales and clays, etc. For example:

¹The industrial development work of the Division of Geology has been carefully described by Dr. Pond in his report in *The Natural Resources of Tennessee* published by the Tennessee Department of Conservation in 1939. The reader is referred to that source for a more complete description of the work of the Division. All quotations concerning the work of the Division are from this work.

For four years the Division has been making field and laboratory examinations of the clays and shales and a great mass of data is available. Comparatively little extra work and the funds to publish the long detailed report will put us in a stronger position to attract this industry.

4. Publication of the technical pamphlets reporting the results of research on particular resources and, in addition, the Division has published a *Summary of Mineral Resources of Tennessee*.

5. Analysis service.

According to Dr. Pond, "seven or eight hundred samples of rocks and minerals are sent the State Geologist each year for identification and a report as to value." As a supplement to the analysis service: "Advice is also given as to further prospecting and the names of companies which might be interested in buying or mining the material."

The work of the Division on water resources has been carried on "in co-operation with other agencies, mostly Federal." In recent years "the Tennessee Valley Authority has been a heavy contributor to the joint pool for the surface water studies, their funds being used in the Valley only, and the individuals and companies have dropped out of the picture." The water resources studies involve analysis and measurement of flow of both surface and underground waters for commercial and industrial uses.

Mapping is the third major type of work of the division. According to Dr. Pond, "The best map for all purposes and the most accurate is the topographic map," which, "not only shows distances in two dimensions but also shows the third dimension of height."

These maps are used to lay out highways so as to get the road through with the least number of hills, by railroads in the same way, and for river development, for, since the shape of the hills is shown, it is possible to select a dam-site in the office and tell how large the reservoir will be and how much water it will hold.

In order to provide the basic detailed data on resources in Tennessee required for an effective industrial development program the work of the Division of Geology should be increased. To cite only a few needs:

1. Funds are needed to keep up to date the analysis of borings from oil wells. According to Dr. Pond, "ten or fifteen geologists from industries come to the office every week for information, and if it is not available they will probably go to other states."

2. Funds are needed for a more careful analysis of the large

deposits of high-grade limestone in Middle and East Tennessee

3. A more careful study of the exact quality, quantity, and location of clays and sands in West Tennessee is necessary before new industries can be induced to develop them on any large scale
4. Funds are needed for a long-range study of coal deposits in the state
5. Because of the lack of a laboratory and a full-time chemist, the analysis of samples sent to the Division of Geology is greatly delayed
6. Additional funds are needed for the completion of topographic maps for the remaining areas of the state
7. Several technical studies already completed and others which need bringing up to date cannot be published for lack of funds.

There are other limitations to the amount of research essential to an industrial development program in Tennessee which the Division of Geology with its present budget is able to perform, but the ones listed above certainly suggest the need for the expansion of the work of the Division.

THE TENNESSEE STATE PLANNING COMMISSION

The Tennessee State Planning Commission, because it has been concerned primarily with other problems, has done less than those within the organization had hoped to do to promote industrial development in the state. In 1937-38 the Commission planned a survey of the state's industrial resources and industrial growth preliminary to a program of industrial development, but due to lack of competent personnel for this special job and the pressure of other duties, the plan was abandoned. Food merchandising surveys were conducted in Memphis and Nashville in 1938 to discover possible products sold in these cities which might be produced in Tennessee. A number of requests for information are received by the Commission from prospective industrialists and other such requests are referred to the Commission by various state agencies merely because of the absence of any central agency to handle such requests. The Commission at present is poorly equipped to service these requests. In many instances accurate detailed information is not available and funds are not adequate to permit the collection of such data. Hence,

it can give only general and incomplete replies based on such information as happens to be available in its files or such information as it can obtain hurriedly from other agencies, such as the Division of Geology, the Tennessee Valley Authority, the University of Tennessee, and others. The lack of detailed industrial information in the Commission's files, through no fault of its own, plus the pressure of other work, frequently results in considerable delay in providing incomplete replies to requests for information from prospective industrialists.

THE UNIVERSITY OF TENNESSEE

As an important part of its services to the state, the University of Tennessee is carrying on a two-fold program aimed at raising the real income of the people of the state. First, through various research, student teaching, and adult education programs information is made available which is designed to enable the people to make more efficient use of the money income they do obtain. Second, through research, teaching, and public information considerable effort is expended for the purpose of increasing the mony income of the people by the discovery, development, and more efficient use of the state's resources.

A detailed description of the work of the various departments of the University in each of these two major fields is beyond the scope of this work. Simply as an indication of the nature of the efforts to raise income through the development of industry and the more efficient use of resources a few illustrative examples of the work at the University are presented here.

1. The agricultural research and extension services are designed to increase agricultural income through the more efficient use of the land.
2. Industrial research for the purpose of developing new products and the more efficient use of resources is being carried on. A few outstanding results of this type of research are:
 - (a) The development, in co-operation with the Tennessee Valley Authority, of a new and improved quick-freezing process for preserving foods. This process was placed in commercial use in 1940 in Cleveland, Tennessee.
 - (b) New equipment and improved methods of processing cottonseed which greatly decrease the cost of processing and increase the amount of oil recovered from

a ton of seed. Released through the University of Tennessee Research Corporation, a non-profit organization, this process is in use in a number of mills in the southern states.

- (c) The development of a process for producing a black plastic of light weight from cottonseed hulls, a very cheap and little used raw material. This plastic which may be used for telephones, pieces of electrical appliances, ash trays, fountain pens, steering wheels for automobiles, etc., is now being used satisfactorily by a Knoxville firm in the manufacture of sheaves for looms.
 - (d) The development of an apparatus which greatly increases the accuracy and speed of grading cotton fibre.
3. Examples of economic and business research.
- (a) In a number of instances the University has collected and analyzed business and economic data for various agencies concerned with industrial development in Tennessee.
 - (b) Studies of the effect of taxation upon industry in the state have been prepared.
 - (c) A study of the milk industry in East Tennessee is now in process.
 - (d) This very study, growing out of the Conference on Commercial and Industrial Development of Tennessee and the South sponsored by the School of Business Administration in 1939, is simply another example of the efforts of the University to promote industrial development in the state.

The above are only a few illustrations of the work of the University to develop industry in Tennessee. The broad activities of the University in this field may be grouped under: (1) training of students for industrial and commercial positions, (2) technical advice on industrial problems, (3) industrial and commercial research, and (4) public information.

At present the University program is severely limited by lack of funds for commercial and industrial research. The scope and effectiveness of the University's program for industrial development in Tennessee could be greatly increased by funds which could be used for research fellowships for work on special problems, and funds

which could be used to release part or full time various specialists for purposes of consultation and research on some of the more pressing problems in this field.

THE TENNESSEE VALLEY AUTHORITY

The TVA Act empowers the Authority to promote navigation, flood control, and utilization of surplus power; to conduct experiments in manufacture of phosphate fertilizer and in other activities related to soil conservation; to promote a wider and better use of electric power by local industries; and to conduct studies and prepare plans for use by Congress and the states in connection with the proper use, conservation, and development of the natural resources of the region.

All these provisions have a relationship to a major purpose of the Act which, as stated in the preamble, is "to provide for the agricultural and industrial development of the Tennessee Valley."

The stimulation and widening of economic opportunity in the region is therefore an important concern of the Authority.

The Authority contributes to the growth of industry and commerce in two major ways:

1. The programs of improved water transportation, low-priced electric power, and soil and forest conservation are laying foundations for the industrial and economic growth of the region. Detailed information about these facilities and their uses is provided the people of the Valley.

2. Technical research programs and industrial and economic studies of the Authority help open up economic opportunities for industry, agriculture and other occupations in the region.

Some of the more important activities of the Authority which contribute to the growth of industry and commerce are indicated below.

1. *Utilization of the improved Tennessee River*—In addition to the program of channel improvement and navigation facilities, the Authority has made studies of public-use terminal facilities available to industry and the public for the information of river communities interested in development of such terminals.

The Authority has also conducted a survey of some 3,700 industrial and commercial shippers and receivers of freight in the Tennessee Valley and adjacent areas for the purpose of determining

the approximate volume and types of traffic which might move over the river after completion of the nine-foot channel in 1945. This information will be used to assist communities along the river in the planning and construction of general-use terminal facilities and to furnish information of value to shippers who are planning to use the river.

2. *Utilization of electric power*—The production of low-cost electricity in large amounts has been of service to many types of large and small industry, including concerns making phosphates, aluminum, and other electro-metallurgical products which are heavy users of electric power. In addition, electric power extension into rural areas is proving useful to small industries and service shops there. The availability of substantial amounts of low-cost power in the Tennessee Valley is proving particularly valuable in view of necessary expansion of national defense industries.

3. *Technical research program*—In connection with soil conservation objectives, research on agricultural processing industries and on farm equipment is conducted by the Authority in co-operation with engineering and agricultural experiment stations and extension services of the land-grant colleges in the Tennessee Valley states.

This co-operative policy of research has been adopted because it avoids duplication and by joint effort and pooling of knowledge and facilities, makes it possible to undertake a greater number of the many research projects needed in the region; as a further effect, this "grass-roots" policy of inviting local participation is resulting in local institutions assuming greater leadership in the conduct of such needed research. Some of these co-operative research projects are as follows:

a. New immersion process and equipment for the individual quick-freezing of fruits and vegetables have been developed in co-operation with the University of Tennessee Engineering Experiment Station, and tested in an experimental plant on a semi-commercial scale. The quick-freezing process and equipment were placed in commercial use in 1940 by a farm cooperative at Cleveland, Tennessee.

b. Improved equipment and methods of processing cottonseed have been developed in co-operation with the University of Tennessee Engineering Experiment Station, and tested on a cottonseed pilot plant at the station. The improved cottonseed cooker result-

ing from the research is in use in 26 installations in 13 mills in six Southern states¹

c. Other major agricultural processing research is being conducted on growing and cost-saving processing of flax to produce fiber that can be spun and woven on cotton mill machinery. This project is conducted in co-operation with the Georgia Agricultural and Engineering Experiment Stations. The flax processing research has developed effective laboratory equipment that is now being tested on a larger scale in a pilot plant constructed at the Engineering Experiment Station.

d. Research is in progress on new uses and improved methods of utilizing wood and other forest products, a major resource of the Valley, in co-operation with engineering and agricultural experiment stations in the Valley and with the U. S. Forest Products Laboratory and the Bureau of Chemistry and Agricultural Engineering of the U. S. Department of Agriculture.

e. Research on low-cost farm equipment adapted to Valley conditions has resulted in development of a rural community refrigerator in co-operation with the University of Tennessee Engineering Station and of a barn hay dryer in co-operation with the University of Tennessee Agricultural Experiment Station, and also of a contour furrow seeder for planting winter grain on hillsides, a thresher for small acreages, electrically heated sweet potato houses, farm irrigation systems, and others. These developments have been tested in rural areas in Valley states in co-operation with the agricultural extension services.

It should also be pointed out that the rural electrification program of the Authority conducted in co-operation with the State Agricultural Extension Service has brought about a large increase in

¹The success of this project is an example of the value of co-operative engineering research. The project was initiated at the University of Tennessee in 1929, as a result of a contribution by the Tri-State Cottonseed Oil Mill Superintendents Association. A few years later the Engineering Foundation, at the request of the Research Committee of the American Society of National Cottonseed Products Association and local oil milks. Of late, research the same time the TVA became jointly interested in the work and helped to build a pilot plant in which was installed machinery contributed by the National Cottonseed Products Association and local mills. Of late, research on a small commercial scale is being carried on by the University of Tennessee Experiment Station and a University of Tennessee Research Corporation has been set up to license and control the use of the process. Here then, we have a state institution of learning working with a federal government agency, a professional society, a trade association, and private capital all working together for a common purpose now by the upbuilding of regional agricultural economy.

the farm use of electric equipment and appliances, such as lights, water systems, refrigerators, small motors, etc., and industry is finding substantial sales in this new rural market. While practically all of this equipment is being furnished by manufacturers located in the North and in other regions, since the Tennessee Valley has little or no manufacturing of this kind, a number of small companies have begun the manufacture of farm electrical equipment in the Valley area in recent years. Their products include churning, farm water systems, and meat-aging cabinets. Other new concerns are making electric room heaters and hot water heaters.

4. *Surveys and experiments on mineral resources*—Field surveys, laboratory tests and research on mineral deposits are made to determine their character, extent, and probable commercial use. This research is done in co-operation with state geology divisions and the U. S. Geological Survey. The purpose is to find new and wider uses made possible by low-cost electric power, water transportation, and the local application of new processes being developed by federal and state agencies and by private companies. Emphasis is given to the minerals in the region which have been as yet little developed, which have value in national defense, or from which by-products may be recovered. A small Minerals Testing Laboratory is maintained at Norris, Tennessee.

Close co-operation is maintained with the U. S. Bureau of Mines' Electrotechnical Laboratory at Norris, Tennessee and with individual operators upon request.

The following are representative of the Authority's work in minerals:

a. Kaolin deposits in North Carolina are being used in much greater quantity by domestic manufacturers of chinaware following surveys of these deposits and improvements in refining processes made in co-operation with a private producer. To a large extent, this kaolin is replacing previous importations.

b. North Carolina deposits of vermiculite used for light-weight insulation building material are now being mined and processed by several companies following surveys by the Authority of these deposits and their extent and characteristics.

c. Research is now being conducted by TVA in co-operation with the Georgia Engineering Experiment Station at the Georgia School of Technology, on olivine mined in North Carolina to develop

commercially practical ways of obtaining magnesium for use in alloys of value in airplane construction.

d. Other research includes surveys of Tennessee clays, conducted with the Division of Geology of the Tennessee Department of Conservation; Alabama sandstones, with the Alabama Geological Survey; and surveys at the request of private producers or others of mica, barites, manganese, limestone, and bauxite.

5. *Transportation Studies*—The Authority has completed two factual studies showing the disparity in railroad freight rate levels on manufactured goods from the South and West to the North, as compared with the lower levels within the northern states and from eastern Canada to these latter states. These studies published as congressional documents brought out the harmful effects of this situation on the economy of the South and West and attracted wide attention throughout the nation. Recently the Interstate Commerce Commission announced a comprehensive investigation of class rates (freight rates which apply on items of higher value such as manufactured goods) in all territory east of the Rocky Mountains.

6. *Industrial Economic Studies*—Information on transportation facilities, resources, power, industry, and statistics on the Tennessee Valley, much of which is acquired by the various departments of the Authority in the course of their operations, is assembled and compiled for use in replying to inquiries received from business interests and from public agencies about various economic phases of the Tennessee Valley. This includes data on industrial water resources in the Valley, industries in which the Southeast is deficient, industries in the Tennessee Valley, navigation conditions on the Tennessee River, and other topics.¹

Manufacturers inquiring about a plant location in the region in most cases request information relating to power, mineral resources, transportation facilities, water supply, and other data already on hand. The Authority does not recommend any particular location for the manufacturer; but supplies information on a number of communities which meet his minimum requirements.

Community organizations request assistance in solving their industrial development and general economic problems. The Authority makes suggestions and provides data from its files.

¹Among the many articles of which southeastern manufacturers make less than five per cent of the nation's output are the following: electric appliances and equipment, farm implements, soap, leather goods, toys, men's clothing, radios, and tools.

The TVA does not solicit or encourage migration of industry from other regions. Rather, the possibilities of local development of new industry are emphasized. The various contributions of the Authority's program to industrial development as described in this statement are important steps in this direction.

7. *Forest Improvement*—The Authority's foresters are completing a detailed inventory of the Valley's forest resources, which will make available to industry for the first time complete information on the character, volume, quality, location, and extent of forest resources. The information also will be useful in indicating what types of forest industry development are possible and most beneficial to any given area in the Tennessee Valley.

8. *Community, Recreational, and Health Activities*—Certain activities of the Authority help improve community facilities for working and living upon which industrial development is dependent. In a largely rural area like the Tennessee Valley, the demonstration value of such improvements in helping small communities modernize their facilities and methods is particularly important.

In summary it should be pointed out that in its activities relating to power, transportation, development of natural resources, health, and community planning, the Authority has been laying foundations important to industrial development. In addition, its program of industrial research in co-operation with state research institutions aids local development of industry. In the course of all these activities, the Authority has accumulated much important data of current interest to industrialists, which are made available upon request.

It is also important to notice that the effects of these activities of the Authority on industrial growth are not all limited to the Tennessee Valley proper. For example, TVA electricity is available throughout almost all of the state of Tennessee and in a large part of northern Mississippi. The benefits of improved river transportation extend well beyond the watershed boundaries. Research developments such as the cottonseed cooker and barn hay dryer are finding use in many states. The work of the Authority thus benefits directly many areas outside the Valley.

It must be remembered here that while the Authority can provide these facilities or foundations, they become assets for industrial growth only to the extent that the people of the Valley themselves take advantage of them as opportunities and work toward their full utilization. The same may be said of the research developments and

economic data being made available by the Authority. Local initiative and the fullest use of local brains and capital are essential to industrial development in the average community.

From the standpoint of an effective industrial development program in Tennessee certain limitations of the work of the Authority should be borne in mind. First, the detailed surveys of mineral, water, and forest resources are limited to the valley counties and thus exclude more than half the area of Tennessee. Second, as pointed out above, the work of the Authority is not limited to Tennessee but is applicable in a large degree to other southern states. Thus, the work for industrial growth hardly places Tennessee at a competitive advantage. Third, the Authority is prevented from carrying on any program of advertising or publicity to induce prospective industrialists to consider a location in the area. Direct contact work and the selling of a location is also outside the scope of the Authority's work. All that the Authority can do in this direction is to make such information as it has available to interested industrialists upon request. This means that if Tennessee is to take full advantage of the basic work of the Authority in industrial development, the state must provide some means of advertising and promoting the industrial resources and possibilities discovered in the state.

CHAMBERS OF COMMERCE

There is no state-wide chamber of commerce in Tennessee to serve as an agency for the promotion of industrial development. As of December, 1940, there were only 17 chambers of commerce in the state and four of these were in the large cities.

The chamber of commerce in each of the four large cities has a full-time secretary, a more or less active industrial development committee, and a separate budget for the purpose of bringing new industries to the city or surrounding area. In each of these cities the chamber of commerce has a working arrangement with some organization in the North and East through which it is able to contact some of the industrialists who are contemplating a southern location. In each large city, the chamber of commerce has completed a more or less comprehensive industrial survey which shows in a general way the essential facts on resources, industries and the tangible locational factors. In their industrial promotional efforts, these cities appear to be limited chiefly by the lack of detailed and accurate information on resources, the inability to contact industrial prospects,

and lack of funds for this type of work. The organization for industrial promotion in the four large cities is more efficient than similar organizations in small towns. Since, roughly, 55 per cent of all manufacturing in Tennessee is now concentrated in the large city counties, this more efficient organization for industrial promotion may tend to increase the degree of concentration in these counties.

With the exception of the four large cities and towns with population of from 10,000 to 25,000 the chambers of commerce are doing very little to attract industry. Towns which do not have chambers of commerce frequently have at least an industrial committee, a group of business men, civic club or some group created for the purpose of developing industry in the local area. In most of these towns, however, the organization is on paper only and there is very little evidence of any active industrial promotion. In view of the facts, little more could be expected from independent action by small towns and areas. Most of these small towns can offer opportunity to but one or two plants and perhaps very small ones at that. The possible benefits from obtaining one or two such plants are too small to justify the maintenance of an active interest in trying to obtain the plants or the financial expense involved in maintaining an active organization. Too, in practically every case, these towns are too small to finance the collection and analysis of the detailed industrial data necessary to interest a prospective industrialist. Furthermore, it is extremely difficult for these small towns, acting independently, to learn of desirable industrial prospects. If industrial promotion is to be effective in developing industry in the small towns in Tennessee, aid must come through some larger outside agency which can distribute the overhead cost of industrial development over a greater number of located plants, undertake the analysis of resources, contact industrial prospects, and aid in selling them a location.

RAILROADS AND POWER COMPANIES

In an effort to increase the volume of traffic on their respective lines, the several railroads in Tennessee, as in other states, maintain active industrial development departments under the direction of an industrial engineer. In the files of these departments and to some extent in material published by the railroads there is obtainable a vast amount of the more readily available information on industries, resources and locational factors in the freight territory served by these railroads. The larger railroads have their own geologists and industrial engineers to supplement through original investigation the

material on resources provided by federal, state and private agencies and to prepare detailed reports on given locations for a particular plant. But, in general, these research and industrial development departments of the railroads depend upon the information on resources provided by the established agencies and the particular localities.

These railroad industrial development departments offer certain advantages and disadvantages. First, through their contacts in the financial centers and the more highly industrialized areas they are able to learn of contemplated industrial moves or industrial expansion. Through these contacts the railroads have provided many of the smaller towns along their systems with industrial prospects. Second, it is probably true that the industrial development departments of the railroads are more competently staffed and more thoroughly trained in the technique of plant location than any group in Tennessee except persons in the Tennessee Division of Geology and the industrial committees in the four large cities. There are, however, two important difficulties. First, since these rail systems cover states other than Tennessee these departments are interested in locating plants on the system rather than specifically in Tennessee. Second, since the interest of the railroads in locating plants is to develop traffic for their particular road they will obviously seek to develop industries in towns served by their road alone and to avoid towns served by competing roads. Hence, the industrial development departments of the railroads are less active in the industrial development of towns with two or more railroads. Too, since many small towns in Tennessee are without rail service, but may develop industries served by truck, the railroads are obviously not interested in developing industries in these towns.

Prior to their sale to the Tennessee Valley Authority the private power companies in the state assisted industrial development in Tennessee in three ways:

1. The private power companies employed industrial engineering firms to prepare industrial surveys of various towns and areas in the state.
2. The power companies advertised the industrial advantages of Tennessee in national magazines.
3. The private power companies were able to secure industrial prospects through contacts in industrial and financial regions through the parent organization and subsidiaries. The industrial divisions of the power companies were important agencies in selling these prospects on a Tennessee location.

In the field of investigation and research for industrial development the work of The Tennessee Valley Authority represents a distinct gain as compared with the work of the private power companies. As for continued national advertising of the state's resources and industrial opportunities in publications which come to the attention of industrial prospects and in the matter of contact and selling of these prospects, the disappearance of the private power companies represents a definite loss which has not been met by any public or private agency.

SOUTHERN GOVERNORS' CONFERENCE

Tennessee is co-operating with other southern states in removing the barriers to, and in working for, industrial development through the Southern Governors' Conference which is composed of the governors of 11 southern states. The Southern Governors' Conference is sponsoring a ten year development campaign through which it is hoped to produce a better "balanced" economy, to adjust agriculture to present requirements, accelerate industrial expansion, and improve human welfare in the South. To give direction to its activities the Conference has adopted "Ten Roads to Progress." Three of these are directed to industrial development:

1. "Balance farms with factories"
2. "Balance scientific production of high quality products with scientific marketing, including grading, processing, packing, and adequate transportation without unreasonable trade barriers"
3. "Utilize and develop all natural resources in keeping with wise conservation policies."

A general chairman of the ten-year campaign has been appointed by the Southern Governors' Conference and each governor has been requested to appoint a general chairman for his state.

GAPS IN THE PRESENT PROGRAM

The preceding discussion shows that considerable work of one kind or another is being performed by a number of independent agencies in Tennessee to promote industrial growth in the state as a whole or particular parts of the state. Certain limitations of the work of these separate agencies have been noted in the above discussion of their principal activities. When one attempts to fit the activities of these several agencies together and look at their work as a whole, there are immediately apparent several crucial gaps or

weaknesses in the program for industrial development in Tennessee as compared with industrial development programs in a number of competing states.

1. There is in Tennessee no integrated state-wide program for industrial development. There is no state agency definitely charged with the responsibility of promoting industrial development in the state. There is not even a state chamber of commerce. Instead, as pointed out above, there are a number of different agencies and groups working independently and with varying amounts of effort to promote industrial development in particular areas of the state and to provide the necessary information for its development in certain fields. Obviously, since there is no state-wide industrial program there are no clearly stated objectives and no clearly stated policies of industrial development.
2. There does not exist in Tennessee any permanent organization, adequately financed and with trained personnel, for carrying on a program of industrial research and promotion *for the state as a whole*. This is the situation in the state despite the inescapable conclusion that the industrial development of an area which can be attributed to deliberate effort on the part of promotional agencies takes sustained effort over a long period of time, costs money, and requires competently trained persons who make industrial development their main business rather than a side-line. The truth is that except for a full-time person in four or five cities, and except for the work of the Tennessee Valley Authority and the Tennessee Division of Geology practically all efforts to promote industrial development in Tennessee are sporadic, side-line efforts. True, various groups are active for brief periods, but then activity dies down and the problem is forgotten. Aside from that specifically mentioned above, such promotional work as is carried on in Tennessee is performed by persons or agencies whose main jobs lie elsewhere.
3. Not only is there no permanent state organization for carrying on a state-wide program of industrial development, but, even worse, there is no machinery for effecting co-operation among the several independent agencies now working on the problem. As now carried on there is no arrangement for pooling the available information on industrial resources and possibilities and soliciting the experience and

thinking of the ablest workers and students of industrial development within the state.

4. Because of the cost involved and lack of trained leadership for the purpose, the individual small towns of Tennessee are not in a position to collect and analyze the necessary detailed information on resources, advertise their industrial opportunities, contact industrial prospects and sell them a location. Consequently, except in rare instances, there is practically no effective effort to promote industrial development in the small towns of Tennessee. Most of the small towns can offer advantages to but one or two plants at most. The benefits to be obtained and the uncertainty of getting these plants do not justify the expenditures necessary to collect and analyze the local data and maintain an effective local organization to try to secure these plants.
5. Much of the detailed information on Tennessee resources essential to an industrial development program is not available. While considerable research on resources has been completed and is now being carried on by the Tennessee Division of Geology, the Tennessee Valley Authority and The University of Tennessee, as previously pointed out, their work is limited by lack of funds. The industrial research program needs to be stepped up and integrated. On far too many of the state's industrial resources in many areas there is available little precise detailed information of the type required by an industrialist in making a locational decision. Instead of the general information now available, further geological, physical and chemical research is essential to show (1) the exact location of the resources, (2) the quality of the material, (3) the commercial quantities available, (4) the permanency of the supply, and (5) methods of overcoming processing problems peculiar to the given supply of the resource. As Dr. Pond, State Geologist, has pointed out, Tennessee has the resources to make it "a great industrial area," but there are lacking "adequate surveys, records, maps and other data to definitely convince industry that this is the logical place to make money."¹
6. There is no program for advertising the industrial resources and industrial opportunities in Tennessee. An appropriation of \$100,000 is available for advertising the state's at-

¹Tennessee Department of Conservation, *The Natural Resources of Tennessee* (1939), p. 9.

tractions for tourists, but there is no fund for advertising the state's industrial resources. As pointed out in Chapter IV, a number of competitive states have appropriated \$50,000 to \$100,000 for this purpose.

7. There are no systematic means of discovering or contacting out-of-state industrial prospects who might be induced to locate new plants or branch plants in Tennessee. Aside from the chambers of commerce in the four large cities and the railroads, there are practically no arrangements for learning of prospective industrialists who might locate in Tennessee.
8. There is in the state no definite central agency for supplying accurate and detailed information on industries, resources, and industrial possibilities requested by interested industrialists. Consequently, such requests are generally referred from one agency to another with the result that even after considerable delay only general and incomplete answers are available.
9. Tennessee is without the services of an industrial engineer to contact prospects and supply them with data on their particular industry and to aid them in choosing a location.

CHAPTER VI

SOME LIMITATIONS AND POSSIBILITIES OF AN INDUSTRIAL DEVELOPMENT PROGRAM

If one agrees that the combined force of the arguments presented in the preceding chapters of this study is sufficient to justify increased attention to an industrial development program in Tennessee, the immediate question is: What, if anything, can be done about it. Recognizing the need for greater industrialization in the state as a means of increasing wealth and economic opportunity and desiring its realization is one thing, and achieving that end within any reasonable time and cost limits is another. Consequently, it is important to examine some of the limitations of any industrial development program and to think carefully of some of the general fields within which a sound program may be reasonably expected to produce positive results.

SOME BASIC CONSIDERATIONS

In examining the possibilities and limitations in setting up an industrial development program in the state there are certain fundamentals which it is necessary to recognize.

First, any effective program for industrial development must be a long-range program. Eliminating the discovery of large quantities of some new resource and revolutionary technical changes which suddenly give new importance to old resources, the difficulties involved in developing new industries in a region or inducing old ones to move in are so great that they can be overcome, if at all, only over a period of years. Expectation of material increases in industry in any short period is not justified either on the basis of the theoretical and practical difficulties involved or on the basis of the experience of other geographical areas with industrial development programs. Rapid development from a program is an exception rather than the rule. As pointed out below, this fact has important implications in setting up any industrial development program.

Second, the uncertainty of the results and the length of time before material benefits are likely to be received under any industrial development program generally make it difficult to arouse enough interest initially and sustain that interest long enough to secure adequate financial aid for a sound long-range program. Instead, specific groups likely to share in the immediate benefits from any new industry are likely to be very active once such a pros-

pect is in sight; but, because of previous inactivity, they are very likely to be caught without adequate local data to provide the prospect with enough accurate industrial information to justify serious consideration of their particular location. Consequently, sporadic efforts to obtain industry are likely to resolve into a contest of financial inducements between interested localities with the all too frequent result that the area obtaining the industry gives up in subsidies and indirect costs more than it need have and, in some cases, more than the benefits from the new industry.

Third, in addition to lack of interest on the part of influential citizens and rather widespread inertia, almost any development program is likely to encounter serious opposition from particular persons or groups in different localities. Frequently the insurmountable or "defeating element" in a state-wide industrial development program "is the fact that it is impossible to obtain an equal and simultaneous benefit to all every time any benefit is obtained."¹

In this connection a further serious difficulty of organizing and maintaining a state-wide industrial development program in Tennessee arises from the shape of the state and the geographical and industrial divisions within the state. The length and narrowness of the state plus the fact that two large cities, Memphis and Chattanooga, are located right on the state line means that many of the benefits from an industrial development program are likely to spill over into border states and thus increases the difficulty of obtaining support for such a program. Aside from the political differences following in general the three major geographical divisions of the state, there are marked differences in the present amount and type of manufacturing and, to all appearances, differences in the possibilities of developing manufacturing in these three geographical divisions. These differences are likely to be strongly reflected in differences in the degree to which these divisions would support a state-wide industrial development program.

Fourth, it is important to recognize that Tennessee is simply one segment of the entire nation and more particularly of the South. Hence, insofar as there are natural or artificial forces such as the freight rate structure, pricing systems, labor regulations, etc., limiting and retarding the rate of industrial development of the South as a whole, these forces are operating to retard the rate of growth of industry in Tennessee. Of course, such limiting forces do not affect equally all states and areas in the South. Because of this

¹F. H. McDonald, *How to Promote Industrial and Community Development* (New York: Harpers and Brothers, 1938), p. 46.

fact, and perhaps because of larger and more valuable available resources, manufacturing in Tennessee has developed more rapidly in the last 16 years than in all but one other southern state. These South-wide limiting forces may be offset to some extent by more intensive effort on the part of Tennesseans, but even so, these forces reduce the rate of growth of industry in the state below the rate it would achieve if these restraints were removed or reduced in force. The point here is that any industrial development program inaugurated by and limited to Tennessee alone can do little to remove or reduce the South-wide barriers to industrial growth. Effective relief, if it comes at all, must come through the co-operation of Tennessee with other southern states. Therefore, any program for industrial development in Tennessee must provide for effective co-operation with other southern states and southern agencies to discover South-wide barriers and to work for their removal.

Fifth, it is tremendously important to recognize that an industrial development program must operate within the framework of a private enterprise system. Hence, it ought to be crystal clear to everyone concerned with the formulation and execution of such a program that, operating in a private enterprise system, there are definite limitations to the effective work designed to increase the rate of industrial development in a given area. This fact, privately owned and operated business, must be at the root of our thinking about any effective industrial development effort. Since economic resources are legally owned by individuals and legally organized groups of individuals and not, except in a few cases, by governments, and since manufacturing in particular is a field of private enterprise, the establishment of new plants or the expansion of old ones in an area is in response to expected profit prospects. This remains true even though in the current defense program some plants are erected or expanded in given areas for political and military reasons. Hence it is essential to recognize that successful efforts to increase the rate of industrial development in any given area must increase the expected profit opportunities in that area in comparison with the expected profit opportunities in other areas. Presumably, the industrialist is seeking that location at which the total unit cost of his final product delivered to his consumers is a minimum, that is, a location such that the combined unit cost for all locational factors, including the cost of reaching his market, is a minimum. To put it another way, the industrialist is seeking that location where his expected profits will be a maximum.

Clear thinking about the problem of industrial promotion designed to increase the rate of industrial development or direct in-

dustrial growth into desirable channels must, it seems evident, involve a careful analysis of each of the more important locational factors to determine, as far as possible, what a development program or a promotional agency can do in connection with each factor to increase its pulling power for prospective industrialists over the pulling power it is now exerting.

EFFECTIVENESS OF AN INDUSTRIAL DEVELOPMENT PROGRAM DEPENDS UPON TYPE OF INDUSTRY

In examining the possibilities of increasing the pulling power of specific locational factors through an industrial development program, double differentiation between two general types of industries and types of locational factors is important. In the first place, it makes for clarity of thought to differentiate between industries on the basis of whether they serve purely local markets or not. In the second place, differentiation on the basis of whether locational factors are ubiquitous or unique helps one to understand more clearly the effectiveness of an industrial development program.

On the basis of the first classification there are some industries which supply purely local consumers and other industries based on human and material resources which serve markets outside the local area.

The industries in the first class, namely, those industries supplying local consumers, are dependent entirely upon the local market, are geared to local population and local purchasing power and in general cannot be expected to grow more rapidly than population and purchasing power. The growth and development of these industries depend upon the growth of other industry and trade in the area. For this group of industries, all that any industrial development program can accomplish is to discover that part of local demand which could be, but is not now, supplied by local producers. Here the work must obviously be limited, first, to discovering the goods which are now bought outside the locality but which could be profitably produced locally and, second, to making this information available to possible producers.

Industries in the second group, those built upon human and material resources and serving other than local markets, are the ones with which an industrial development program must be primarily concerned. These are the industries which attract and hold population, which further create complementary or auxiliary industries of the first type above as well as feeder industries supplying semi-finished goods, parts and raw materials. If an industrial development program is to be effective in increasing the pulling power of

locational factors, it is largely with this latter group of industries that it must work.

In approaching the problem of industrial development of this second group of industries from the possibility of increasing the pulling power of locational factors, it is helpful to differentiate still further between two types of locations and locational factors. First, there are many industries for which the choice of a location is a matter of indifference between several alternative locations. Second, there are other industries for which certain locations are unique. In this case there is a definite estimable net cost advantage in locating in one locality rather than in others. This distinction is important. Some plants locate where they do because they must on the basis of probable manufacturing costs. Others, where probable manufacturing costs appear equal, locate where they do because that location is *sold* to them.

EQUAL COST LOCATIONS

In the latter group of industries, apparent equality of locational advantage in several locations probably results from one or some combination of the following. For some industries many locational factors are ubiquitous, that is, given factors have equal pulling power in a number of locations. In still other cases the combinations of factors give equal unit cost, exert equal pull, in a number of locations. Here a number of locations are available "which offer about the same net advantage in so far as probable manufacturing cost can be estimated."¹ Some low cost factors in one locality are offset by other low cost factors in other localities so that probable unit cost of manufacturing and marketing in the different localities are, for all practical purposes, equal. In still other cases the probable unit manufacturing cost cannot be estimated accurately enough to indicate any net advantage between different localities.

In the case of ubiquitous factors or equal locational factor combinations, the locational decision of the industrialist turns upon (1) intangibles, (2) effective selling by the promotional agency, and (3) subsidies and financial inducements on the part of the different localities. All that an industrial development agency can hope to do here is to attempt to improve the intangibles, do a more effective selling job, and increase the financial inducements offered to industry.²

¹W. Gerald Homes, *Plant Location* (New York: McGraw-Hill Book Co., Inc., 1930), p. 216.

²*Ibid.*

Effective efforts to increase the rate of industrial growth must be aimed at eliminating and preventing unfavorable factors and improving the drawing power of the intangibles, such as, the creation of a favorable community attitude sympathetic toward industry, a unified community spirit and an air of progressiveness, sound government and fiscal policies, good schools, recreational opportunities, etc. The achievement of these ends is slow and difficult and appears to most persons but remotely related to industrial development. Consequently, in the haste of the leaders of many communities to obtain concrete results these intangibles are neglected year after year for more immediate programs, and the communities after a period of years find themselves no nearer the goal than when they started. Finally, it must be realized that the motivation for the improvement of government, schools, physical appearances of towns and recreational facilities, and the creation of a unified, progressive spirit must come largely from other reasons than from the desire for industrial development. For these reasons, it is doubtful whether any industrial development program on a state, region or city basis can be powerfully enough motivated to improve the pulling power of the intangible locational factors enough to bring any appreciable increase in industry except in rare cases. This does not mean that efforts to improve the intangibles should be omitted from a sound industrial development program, but simply that the results from such efforts should be expected to be small and slow in coming.

The principal hope of attracting the ubiquitous factor industries lies in effective advertising, prompt and widespread contact work, and efficient selling of the intangibles in given localities. Here results from an industrial development program must come from carefully searching out the most favorable factors and presenting them by most modern selling methods. After all, such industries have to locate somewhere and such a program would, at least, more nearly assure the several localities in Tennessee of their share of such industries. How much larger that share is than what these localities are now receiving, there appears no way of estimating.

There remains the use of subsidies to induce the location of such industries. It is the author's opinion that, theoretically, these have no place in any sound program of industrial development. The matter of subsidies is treated briefly elsewhere in this study.

Two warnings should be suggested against any program designed to attract industries where the locational factors are ubiquitous. First, since the locational factors are ubiquitous, the competitive scramble for industries on the part of different localities develops

into a contest of high pressure selling methods and a competitive race of financial inducements to industry to locate in a particular area. In many cases there is grave danger that the financial and social costs of obtaining and holding a new plant or industry may exceed the benefits to the community. Second, when locational factors are ubiquitous the industries are less stable than when locational factors are unique. In the former case the only thing that holds a plant in a given location is the continuation of local subsidies and the cost of moving to a new location. If and when the subsidies offered by some new locality exceed the subsidies received in the old location by more than moving costs, such plants are likely to move and create serious economic loss and readjustment problems for the old community, whose economic life has become more or less dependent upon the operation of the plant.

UNIQUE LOCATIONS

In the case of unique locations the problem is different. Here, obviously, the crucial question is what, if anything, can be done to increase the effective pulling power of important locational factors so as to make certain locations unique? This immediately raises the question whether significant locational factors are controllable, that is, whether they can be made more favorable by an industrial development agency. If there are controllable locational factors, then a planned industrial development program may conceivably increase the industrial pulling power of these factors. In so far as locational factors are not controllable, the work of an industrial development program must obviously be limited to discovering and making known the relevant information about these key factors involved in the prospective manufacturer's estimate of probable manufacturing costs. In the case of the non-controllable locational factors which make certain locations unique for particular industries, all that any program aimed at increasing the rate of industrial development can be expected to accomplish comes, in a broad sense, under the head of furnishing accurate information on the key locational factors to prospective industrialists. If a given location is unique, if there is really a single most economical location, then the industry ought to go there. In this case a sound industrial development program is obviously limited to providing sufficient information about the cost factors involved in that location so that the manufacturer may discover the one best location and locate there rather than in a less favorable one.

This does not mean that, as far as these industries are concerned, an industrial development program should consist largely of

advertising, publicity and contact work. Far from it! Of course these are necessary parts of any successful program. But continuing research aimed at ascertaining as precisely as possible the relevant information about the key locational factors involved in estimating probable unit manufacturing cost is absolutely basic to, and must precede, any successful publicity and promotional program.

In the author's opinion, more industrial development programs have failed because effort and funds were devoted primarily to publicity with only minor attention to basic research than for any other single reason. Too frequently, overly anxious groups have rushed into print with commonplace and vague general statements of locational advantages only to be forced to admit, if they got an interested prospect, that reasonably accurate industrial information of the kind required in making a locational decision was not available or even obtainable within any reasonable decision-making period. The furnishing of accurate information—the sole help in the case of non-controllable unique locations—involves planned research to collect the relevant detailed information on the important locational factors, to determine more precisely the commercial quantities and characteristics of raw materials and labor, and to provide reasonable estimates of processing costs.

CONTROL OF LOCATIONAL FACTORS

Those faced with the responsibility of formulating and executing an industrial development program must, in addition, frankly consider the extent to which particular locational factors can be made more favorable, that is, the extent to which their pulling power may be increased. This question obviously must be decided by the program formulating group in the light of given local conditions and in terms of a specific program. In approaching the problem of increasing the pulling power of the locational factors, it is important to consider certain basic facts.

Many students of industrial location believe that the most important technical factors influencing changes in industrial location are power (and fuel); transportation costs, particularly on finished products; changes in the kind of raw materials required in industry; and, in the case of the South, labor costs and reduction of labor troubles. Certainly, much of the movement of industry from other areas to the South has been the result of efforts to obtain low wages and to escape union pressure. Geographical shifts in markets constitute a powerful locational pull, but since markets shift slowly this factor is largely a matter of transportation costs of finished products.

In the opinion of Frederick G. Tyron, an able student of locational changes in industry, the locational pull of resources changes with (1) exploration and discovery, (2) expanding transportation facilities, (3) developing technology, and (4) the depletion of other resources.¹ If this view be accepted as substantially correct, what can an industrial development program hope to accomplish? Since such a program could hardly be expected to affect the rate of depletion of resources in other areas, most of its effort toward increasing the pull of resources must be directed toward (1) increasing transportation facilities and lowering transportation costs, (2) exploration and discovery of new commercial resources, and (3) the development of new products and new technical methods of utilizing currently unused or little used resources.

In some instances a carefully planned industrial development program may discover, reduce, or even eliminate artificial (customary, regulatory or legislative) handicaps affecting transportation, labor costs or the effective tax burden. Planned research may, also, discover new or additional raw materials, determine the commercial quantities available, the amount and permanency of the commercial supply, and indicate probable processing costs. In the case of some raw materials, there are technical problems of processing which geological, chemical, physical and engineering research may solve and thus transform a non-commercial material into a commercial one. In still other instances, there are local industrial possibilities which, because of the limited supply of raw materials or the limited market for the product, are too small to be developed by large national concerns, but which may be profitably developed by small local units or small outside producers. Yet these industrial possibilities remain undeveloped because the necessary detailed information on local resources is not available to small industrialists who might be interested, and these interested parties are not, because of their size, in a position to obtain it. Large-scale industries may be expected to learn of industrial opportunities as they develop in Tennessee, because they are well equipped to locate and appraise these industrial possibilities. The small concerns, both old and new, cannot be expected to do the same. They cannot afford the industrial research facilities for doing the necessary spade work on resources. Planned research and investigation combined with proper contact work under an industrial development program aimed at making information available on small quantities of local resources to small enterprises unable to finance research, or with staffs too small to appraise industrial opportunities,

¹Carter Goodrich *et al*, *Migration and Economic Opportunity*, *op. cit.*, p. 255.

may increase the rate of industrial development by activating more of these small latent industrial possibilities.

We must not delude ourselves concerning the efficacy of any industrial development program in increasing the rate of growth of industry by increasing the pulling power of particular locational factors. There is a very real danger that many persons or groups in Tennessee may fail to support a program for industrial development because of the belief that the influence of the Tennessee Valley Authority upon power rates and transportation costs are sufficient to bring rapid industrial growth. Cheap hydro-electric power and water transportation developed by TVA are so confidently expected by many to bring rapid industrial development of the service area that many persons habitually speak of the Tennessee Valley as the future "Rhur of America."

Lower power and transportation rates are justifiable causes for satisfaction and definitely favorable factors for industrial development.

But cheap hydro-electric power alone is no guarantee of industrial development in the area. As pointed out in an able study of the decentralization of industry:

It [cheap electric power] makes the choice of certain locations less imperative, but for most industries differentials in power cost are not in themselves a very compelling direct inducement. The aggregate expenditure for fuel and purchased electric energy, according to the Census of Manufactures, "is the smallest of the major costs of manufacturing, having amounted in 1929 to 2.8 per cent of the gross value of products manufactured." Purchased electric energy alone represents only 0.7 per cent of the value of manufactured products. For the 'average' industry, therefore, other things being equal, purchased electric energy is too small an item to be a potent incentive in location. It exceeds one per cent of the value of manufactured products in only six of the forty-nine industries examined: clay products, glass, paper, chemicals, rubber goods, and cotton goods, the highest ratio being 3.3 per cent in the case of chemicals not elsewhere classified.¹

Only in industries sometimes termed "electro-process" industries—that is electro-chemical and electro-metallurgical plants—is electric energy sufficiently important to be a major consideration. Here there may be a question whether it is cheaper to bring the raw materials to the power source, as for instance at present in the manufacturing of aluminum, or to produce power near the raw material deposits. In both cases, a regional shift may coincide with a change in the locational pattern, but the

¹Goodrich and others, "A Case for Diffusion", *Migration and Economic Opportunity*, *op. cit.*, p. 385.

industries in which this factor is of great significance are few and are characteristically unimportant as measured by employment.²

On the basis of these facts, one cannot escape the conclusion that cheap hydroelectric power alone does not assure the rapid industrial development of the area.

The development of water transportation on the Tennessee River will place many existing firms in a more favorable competitive position for both raw materials and markets and thus lead to their expansion. Transportation costs will probably lead to the establishment of some new enterprises in those industries which are, by the lower transportation costs, placed in a position where they can now compete with firms in other regions. As in the case of cheap hydro-electric power, this is a definitely favorable factor, but it is possible that many persons are overoptimistic about the effect of cheaper water transportation. The safest conclusion appears to be that the industrial expansion from this cause alone is not likely to be very large in terms of the total now in Tennessee, or in terms of the total growth for Tennessee.

SOURCES OF INDUSTRIAL GROWTH

Let us turn now from the question of increasing the pulling power of the locational factors to the question of the different ways in which industrial expansion may come. It is obvious that industrial expansion in a given area must come from one or more of the following:

1. The development of satellite industries composed of feeder plants which supply raw materials and semi-finished products now obtained outside the area by local manufacturers, and plants which supply consumer goods required by increased population and higher community income
2. The growth of industries already located in the area
3. The migration of industries from less favored regions and the construction of branch plants by existing firms to supply increased demand
4. The development of entirely new industries in the area.

The work of a planned industrial development program in connection with the first group has already been considered in this

²Ibid., p. 386.

tem of private enterprise, individuals and corporate groups will con-
chapter.¹ As for group two, there are probably in many cases dis-
tinct possibilities in studying the handicaps limiting the growth of
presently located industries and in attempting to create conditions
more favorable for the growth of these industries. The value of such
efforts must be appraised in the light of the actual conditions af-
fecting particular industries. The question is: Can a developmental
agency change the factors that make for the success of a given plant
in a particular location enough to justify expansion of the plant more
rapidly than it would otherwise expand? Even though in perhaps
a great majority of these cases the material results of an industrial
development agency's efforts along this line are not likely to be great,
the possibility deserves careful consideration, especially in the case
of small firms and declining industries.

Many southerners think of industrial expansion almost exclu-
sively in terms of the migration of plants from other areas and the
construction of new branch plants in the South. It is true that the
keener competition resulting from the shrinkage of markets forces
manufacturers to seek a competitive advantage through cost reduc-
tion, and thus is obviously causing producers to examine more care-
fully their locational advantages, especially when faced with the
problem of plant expansion and when plant depreciation becomes
large enough to permit consideration of a possible move. But one
must not overlook the basic fact that industry is not very mobile. If
one thinks very realistically about the difficulties and costs of moving
a plant from one location to another, it is easy to see that in the
great majority of cases an industrial development program can reason-
ably hope to achieve but little expansion from this source. The blunt
fact is that very few plants really move. There are exceptions, of
course, such as the wholesale migration of textile plants from New
England to the South.

It is, therefore, largely in the increase of capacity in old indus-
tries through the construction of new or branch plants and in the
development of entirely new industries that an industrial develop-
ment program must seek its results. Even here the development
program cannot be expected to be credited with all the develop-
ment in the area. In most areas, some growth or development may
be expected without any organized program. Some industries will
move in, new industries will be established if the locational factors
are favorable, without any effort on the part of the state, regions
within the state, municipalities, or organized groups. Under a sys-

¹See p. 86.

tinue to discover some of the opportunities for profitable industry if there are such opportunities. Some growth may be expected. The crucial questions which thoughtful persons concerned with the consideration and formulation of an industrial development program should ask themselves about such a program are: First, will the rate of industrial growth expected from such a program, in the light of the limitation previously discussed, be enough greater than it would be without any organized program to justify the expenditures involved? Second, will the industrial growth under a planned program be in more desirable industries than without the program? Third, is the industrial development program likely to produce a more desirable geographical distribution of industry within the state?

CONCLUSIONS

It is evident that these questions must be thought through in the light of specific programs and on the basis of more information than is now available. However, on the basis of the limitations and possibilities of an industrial development program, and on the basis of the experience in other states, the principal activities through which a program may increase the rate of industrial growth appear to be:

1. Publicity and contact work
2. Long-run improvement of intangible locational factors and the prevention of political, social and economic factors unfavorable to industry
3. Subsidies
4. Research to provide more accurate information on identified resources
5. Exploration and research to discover new resources
6. Research to solve processing problems for what are now considered non-commercial resources
7. The development of new products
8. Research to discover artificial handicaps and efforts to reduce or remove them.

On the basis of the results which might be achieved through these activities, the following facts would at least seem to argue for more serious and wide-spread consideration of an industrial development program for the State of Tennessee than has yet been given to it:

1. Some industry for one reason or another is actually moving to the South and in all probability will continue to do so.

2. Many old industrial firms are adding to their capacity and placing that additional capacity in the South in the form of branch plants.
3. Several rapidly growing industries such as chemicals, including rayon, paper, etc., based upon southern raw materials are being developed in the South.
4. The increased quantity of hydroelectric power at lower rates and the development of water transportation on the Tennessee River, by the Tennessee Valley Authority, have increased the industrial pulling power of these factors. Some program should be set up to capitalize on these factors as far as possible.
5. Accurate information on the commercial quantities of Tennessee's several resources of the type required in making a location decision is lacking in most cases.
6. There exists no organized system for placing the relevant information before the majority of possible industrialists who should consider particular locations in Tennessee in deciding on a southern location.
7. Competitive southern states are thinking through and setting up programs to obtain new industries.
8. While the rate of industrial growth in Tennessee during the last 16 years has been more rapid than in the entire nation, the South and in any other state except Virginia, it is necessary to remember that the accelerated rate of industrial growth in recent years has been due almost entirely to the location and growth of five large plants, namely, Bemberg, North American Rayon, Tennessee Eastman, E. I. Dupont and the Aluminum Company of America. Some of these, or even all of them, might as easily have located outside of the state. If Tennessee does not develop an effective industrial development program, such plants in the future may be sold a location in competitive southern states which have an effective organization for doing the selling job.

In brief two points are important. First, since certain industries are growing in the South and certain plants are going to locate somewhere in the South in the next few years, Tennessee ought to give serious consideration to an industrial program aimed at getting its share of that industry, based on its resources, while that industry is locating. It is obviously much easier to obtain a plant looking for a location than to induce one to move after it has located.

Second, because of the rapid rate of industrial growth in Tennessee in recent years, there is danger that responsible persons in Tennessee may feel too complacent about the state's future industrial growth to act as competently and as vigorously as they should.

In the light of these facts it is difficult to escape the conclusion that responsible citizens and interested groups in Tennessee ought to give serious consideration to setting up a state-wide industrial program to operate in those fields in which such a program might prove effective.

CHAPTER VII

SOME SPECIFIC SUGGESTIONS FOR AN INDUSTRIAL DEVELOPMENT PROGRAM IN TENNESSEE

In the previous chapter we examined some of the limitations of an industrial development program and reached the conclusion that, in view of these limitations, such a program might prove effective in certain fields of activity. In the present chapter we propose to outline in some detail a number of the specific things which we believe a carefully planned industrial development program in Tennessee might attempt in each field and which we believe those charged with the formulation and integration of such a program should consider. In so doing it is not intended to suggest, much less to contend, that an integrated industrial development program for Tennessee should include all of the things listed here. Neither is it suggested that this list is comprehensive enough to include all the things which a final programs should attempt. A workable final program must obviously be formulated in terms of the scope of the specific job to be attempted, the funds available, and the organizational facilities for carrying out the work. An acceptable program can emerge only after careful consideration and considerable compromise on the part of affected geographical areas and groups. This partial and preliminary list of elements in an industrial program is presented merely as suggestive of some of the things which an effective program might include. This list of suggestions for an industrial program are here set out in some detail in the optimistic hope that by focusing attention upon some of the problems and elements of an industrial program—many of which are at present receiving little or no attention in Tennessee—it may cause us to consider more carefully the essential parts of an appropriate industrial development program for the state and accelerate action toward the formulation and execution of such a program.

On the basis of the theoretical reasoning in the last chapter and the experience of successful industrial development programs in operation in other states, the broad general fields of activity in which a program may be effective in increasing industrial development appear to be:

1. Research and fact finding
2. The formulation of basic industrial policies believed desirable in achieving a satisfactory industrial pattern

3. Public education to improve the intangible locational factors
 4. Public information, publicity, and promotional selling.
- Here we propose to examine the details of an industrial development program under these four major divisions.

I. RESEARCH

One thing that practically all students of industrial development agree on is that a sound program must be built upon and provide for accurate information on resources and industrial possibilities. Dr. Walter F. Pond, Tennessee State Geologist, emphasizing the need for research to develop industrial resources in Tennessee, writes:

That . . . if we achieve the maximum benefits from our water power, minerals, and other natural resources it is imperative that we compile a great deal of data on freight rates, labor costs, availability of power and a thorough picture of our raw materials so we can convince industrialists that Tennessee is the logical place for industry to thrive.¹

It is, therefore, suggested that research be planned to provide adequate industrial information on (1) material resources, (2) labor resources, (3) governmental policies, laws and regulations, (4) intangible local factors, and (5) existing industries. Let us examine some of the more specific research needs under each of these major heads.

A. MATERIAL RESOURCES

It is essential to inventory carefully the industrial field to discover as accurately as possible, within the limits of reasonably expected returnable costs, what Tennessee actually has in the way of resources.

1. The completed research and usable information on resources should be catalogued and made readily available to the public and those interested in the development of these resources. This has not been done, and such information as has been gathered is so widely scattered in different offices that few persons in the state really know what information on resources is actually obtainable. Hence, most requests by industrialists for data on resources are answered less completely than the available information would permit if it were all together. Furthermore, only by cataloguing and

¹State of Tennessee Department of Conservation, *The Natural Resources of Tennessee* (1939), p. 8.

appraising the industrial data we have is it possible to determine what essential information is missing.

2. A carefully planned research program should be set up to obtain the more urgently required industrial information.

On far too many of the industrial resources in Tennessee, such as forests, minerals, water resources, etc., there is available little information of the specific kind required by a prospective industrialist in making a location decision. Too frequently such data as we have boils down to the rather useless fact that such and such a material is found in certain counties. It is not known whether this means a trace of the material, a small, poor-quality deposit, or a commercially workable one. To provide intelligent answers for prospective industrialists it is necessary to know (1) the quality of the material, (2) the commercial quantities available, (3) the permanency of the particular source for plants of various output, and (4) some of the processing problems for that particular quality of the resource. The lack of this information on many resources calls for greatly increased geological, physical, and chemical research. In line with this need Dr. Walter F. Pond, State Geologist, recommends the establishment of:

A small-scale mineral industrial laboratory to determine the grade of Tennessee minerals, their impurities, methods of purifying and their application to desirable new industries and possible new uses.¹

In some cases, pilot plants should be established and operations undertaken to solve processing problems, to provide a basis for cost estimates, and to demonstrate the commercial possibilities of certain resources. In a few instances such research should result in specific prospectuses for particular industries. Three other recommendations by Dr. Pond are excellent illustrations of the specific type of additional information needed on resource. He recommends:

1. Periodic collection and analysis of waters from rivers, springs, and wells to determine suitability for industrial and municipal use.
2. Measurement of flow and gradient of medium and smaller streams which would give power to single smaller factories in smaller towns and would be suitable for municipal use.
3. Investigation of ground water supplies for the remainder of the State (east half); for increased supplies for farmers, dairies, industry, and towns during droughts.²

¹Tennessee Department of Conservation, *The National Resources of Tennessee* (1939), p. 20.

²Ibid.

Detailed information such as that mentioned above as examples obtained through a planned research program is essential before we can really know what Tennessee has to offer in the way of resources.

Much excellent work has been completed and is now being carried on by several Federal, state and private agencies. Among these we find: (1) Federal agencies: Geological Survey, Bureau of Mines, Forest Service, Department of Agriculture, and the Tennessee Valley Authority; (2) state agencies: The Department of Conservation, particularly the Division of Geology, and the State Planning Commission; and (3) private agencies: railroads, electric power companies, and private industrialists.

Even so, the job is far from complete and progress is slow. These agencies are limited by financial resources, scope of authority, or individual financial interests. The Tennessee Valley Authority, which has done a valuable job of discovering and analyzing resources as far as it has gone, has necessarily limited its work primarily to the Valley counties. The Tennessee Division of Geology is severely limited in its activities by lack of funds. This Division, so important in providing accurate information on resources, received, roughly, \$31,000 a year for all purposes during the two-year period ending July, 1941. Private industry must necessarily limit its work to the larger deposits. In order to obtain the necessary detailed information on resources, the work of these agencies must be integrated and increased in intensity and scope.

It may be objected by some persons that the work of discovery and analysis of resources and solution of processing problems should be left to private industry because private industry reaps the profits from this work. If this policy is accepted, industrial development is likely to be slow. Small concerns lack technical staffs and financial resources to pursue this type of work. Small deposits are, therefore, likely to remain undeveloped. The large firms will be concerned almost exclusively with the larger quantities of resources. Even in the case of larger quantities of resources, it is important to remember that to the extent that similar resources are available in competitive states, other locational factors being equal, a large concern is more likely to give first consideration to resources in those states in which more complete information is readily obtainable.

B. LABOR RESOURCES

Much of the industrial development of the South has been built upon cheap labor. We need to consider whether Tennessee is attracting largely raw material industries and the coarser grades of

manufacture because of the lack of skilled labor. Is the lack of trained personnel a factor limiting the growth of industry in Tennessee? More information than is now available is needed, for example, on:

1. The supply of labor available in the unskilled, semi-skilled, and skilled classes by particular trades and by geographical areas within the state
2. The need for skilled labor and technicians
3. The training programs now under way to provide more skilled workers
4. Labor regulation in the state
5. The effect of national labor regulations on the growth of industry in Tennessee
6. Labor organization and attitudes
7. The relative efficiency of labor in the state as compared with labor in competitive areas.

C. GOVERNMENT POLICIES, LAWS, AND REGULATIONS

It is certainly important to determine as far as possible whether state, county, and municipal policies, laws, and regulations promote or restrict the growth of industry.

1. There should be a careful analysis of the fiscal situation and fiscal policies as well as tax laws to discover whether there are restrictions on the growth of industry from these sources. Specifically, are taxes comparable with taxes in competitive southern states? Are there any taxes which discriminate against industry located in the state? Are certain types of taxes likely to hinder industrial development? What is the effect of county and municipal taxes on industry in those areas? Does industry feel that state, county, and municipal tax administrations are fair and sympathetic toward industry? Is there a fair corporate code?

2. State and municipal laws and regulations ought to be examined to see whether any of them place industry at a competitive disadvantage in the area. Discriminatory taxes on industrial property, burdensome ordinances, and inelastic regulations of various kinds restrict industry.

3. Information should be available on the actual official attitude of various municipalities toward industry as revealed by their acts.

4. The whole problem of subsidies and competitive financial inducements needs to be pretty thoroughly studied in the light of the experience of many Tennessee towns and counties.

D. INTANGIBLE FACTORS

In many cases, particularly where there are a number of equal-cost locations, intangible locational factors are important. Some thought should be given to what, if any, practical measures there are of increasing the industrial pulling power of intangible factors.¹

E. ANALYSIS OF PRESENT INDUSTRY

Here a number of important questions arise on which our information, to say the least, is meager.

1. What are the sources of the chief raw materials and semi-finished materials used in Tennessee industry? Could feeder industries be developed to supply such materials now obtained outside the state?
2. A more careful study of Tennessee markets might discover products consumed but not produced here, but which could be produced at competitive costs.
3. Research may lead to the use of by-products to create new industries
4. Research should be planned to aid industry already operating in the state by discovering artificial barriers and seeking their removal. Are there man-made regional state or local handicaps? Are there artificial barriers in particular industries?
5. What is the competitive position of the more important industries in Tennessee as compared with the same type of industry in other areas?
6. Efforts ought to be made to uncover the possibilities for further processing of manufactured goods now sent elsewhere to be finished. Much of our present industrial production is of the coarser variety resulting in semi-finished goods.
7. Investigations should be directed toward the reasons for the decline of certain industries, such as the woodworking industry. In some cases the depressing forces responsible for the decline of the industry might be removed or reduced, and, in other cases, new markets or new products might replace the old ones so that the industry might continue. A

¹For a discussion of attracting industry through the intangible factors, see pp. 87-88.

- careful study of industrial failures in Tennessee might lead to the discovery of removable or reducible handicaps.
8. Are Tennessee industries largely of the low-wage type? Is this due at all to lack of skilled labor?
 9. Are there removable bottlenecks limiting the expansion of present industries, such as the lack of skilled labor, transportation facilities, etc.?

II. INDUSTRIAL POLICY

In the light of our information about industries and industrial resources in the state, some attempt should be made to outline, roughly, an ideal industrial pattern for Tennessee and to formulate a clear and honest statement of industrial policies believed best calculated to produce that desirable industrial pattern. Obviously, the conceptual pattern, and with it the industrial policies, must be modified as information from the research program increases and as thinking about the problem progresses; but, even from the start, there must be some common understanding of objectives for an industrial development program in the state and some agreement on policies which will lead to the achievement of these objectives. Certainly, as far as the author has been able to discover, there is at present among the several agencies in the state which are more or less concerned with industrial development, no agreement as to the fundamental points to be included in a desirable commercial and industrial policy for the state. If there is any clearly stated policy, no person has indicated any knowledge of it.

It is not the purpose of the present discussion to attempt to outline industrial development policies for Tennessee. Such policies can be formulated only after careful appraisal of available resources and existing industries, and only after discussion in which all interested groups and individuals have contributed their thinking to the final result. Much less ambitiously than the statement of industrial policies, the purpose here is simply to suggest certain questions of policy which should be considered.

1. What should be the state policy on subsidies, financial inducement, exemptions, and special privileges?
2. What should be the policy concerning the attraction of industries which do not bear their full share of social responsibilities, industries which have little community viewpoint, and industries which do not pay their way?
3. Should the policy be one that favors high grade, stable industries and one which discourages weak, unsound, "fly-by-night" industries?

4. What should be the policy concerning the attraction of industries located elsewhere as compared with development of "new" industries?
5. What should be the policy on the question of absentee *versus* home ownership of industry?
6. Should state policy be aimed at furthering the diversification of industry in Tennessee or aimed at equal encouragement in all possible lines?
7. Is there need for any policy concerning decentralization and geographical distribution of industry within the state?
8. What about the question of the encouragement of industries where locational factors are unique as compared with industries where locational factors are ubiquitous?
9. Should there be any policy on the encouragement of industry according to whether it uses replaceable or irreplaceable resources?
10. In view of the objectives, is there any need for a policy on the encouragement of industry according to the effect on the income level of the community?

These are only a few policy questions. This list is illustrative rather than comprehensive. To repeat, the position here is that no industrial program can go very far without a clear statement of objectives and a clear formulation of policies calculated to achieve those objectives. Regardless of the nature of any industrial development program or the kind of organization to execute such a program, a critical examination of industrial objectives and policies is certainly needed in Tennessee.

On the basis of the information obtained from a planned research program and in line with the industrial objectives and policies, there should be a step-by-step formulation of an active working program for industrial development in Tennessee. Some elements of a promotional and selling program are suggested in the next two sections.

III. INFORMATION, PUBLICITY AND PROMOTION

Research to obtain the information on Tennessee resources and industries is obviously only one part, although an absolutely essential one, of industrial development for Tennessee. The other part is the actual use of this information to obtain more industry. Effective use of the facts obtained from research to increase the rate of industrial development involves (1) the creation of a central source of information, (2) advertising and publicity campaigns, and (3) promotion through direct contact work.

A. CENTRALIZED SOURCE OF INFORMATION

There should be created in the state a single, centrally located agency which would serve as a clearing house of information on industry and industrial resources. All requests for information on resources, industries, markets, taxes, state and municipal regulations, etc., by present and prospective industrialists and various groups concerned with industrial promotion should be directed to this agency, which should be sufficiently staffed to give such requests prompt attention.

Under the present set-up, requests by industrialists for information on resources and industries are all too frequently incompletely answered after considerable delay. Such requests as are now received are frequently sent to the Governor's Office, or some other state department from which they are transmitted to the Department of Conservation, the Division of Geology, the State Planning Commission, or, in some instances after considerable time, to the Tennessee Valley Authority. In a number of instances usable detailed information is not available, or only part of the information is available, and the agency which finally answers the request does not know where the other information may be obtained or whether it can be obtained at all.

A central agency should be created to furnish accurate information about resources, industries, etc., to industrialists and other interested parties. The information resulting from the research program should be available in the central files of this agency as far as it is practical to keep it there. If it is not feasible to record the information in the central files, then the central agency's file should show what other agency in the state does have the information, if it is available. If the information is not available, the central files should show that fact. Requests for industrial information could then be answered promptly and as completely as all industrial data available in the state would permit.

In addition to the unpublished data in its files, the central agency on information should keep for distribution four types of publications:

1. A state book (survey) which would present the key industrial facts about the state as a whole
2. Local industrial surveys of municipalities and regions in the state which contain only local data arranged according to some unified plan suggested by some central authority under the state industrial development program
3. Technical pamphlets which report in detail the research in-

formation on a given resource such as are now published by the Division of Geology on kaolin, coal, etc.

4. Industrial prospectuses for industries on which the information is complete enough. The results of researches on types of industries suitable for Tennessee should be embodied in specific industrial prospectuses, containing complete economic and technological analyses of processing problems, costs, and relevant information on the locational factors.

Those in charge of industrial development programs too frequently spend most of their enthusiasm and energies on comprehensive surveys which are of little value. The chief dangers are that the information will be so general in character that the survey is of little help to particular industries and that the large job of compiling the detailed data proves too large to handle with available personnel. Despite these dangers, in view of the need for both general and specific information, there appears definite merit, first, in preparing a state publication of some kind containing the more important general industrial information about the state, and, second, local surveys which contain more detailed local information not presented in the state report. Obviously, the state book should be limited to information which applies to the state as a whole. It is suggested that such a book ought to contain:

- (1) A statement of the state's industrial policy
- (2) An abstract of the principal laws, regulations and tax measures affecting industry
- (3) Information on quantity, quality, and location of resources
- (4) General information on the size and location of present industries and on the amount and rate of industrial growth
- (5) A list of industries for which various areas of the state offer unusual advantages
- (6) A brief statement of the objectives and an outline of the industrial development organization together with a list of agencies in the state which are in a position to supply more detailed information on specific subjects.

If care is exercised in avoiding duplication in the two types of publications, namely, the state book and local industrial surveys, local industrial groups can be spared the expense of publishing the state information as many times as there are published local surveys. If the two publications supplement rather than duplicate each other, a request for industrial information first received by a particular

locality, could be answered by sending both a copy of the general state book and a copy of the local industrial survey. Together these two should provide the industrialist with all the general information he requires. More detailed information about a specific industry would, of course, have to come from further correspondence and interviews.

B. ADVERTISING AND PUBLICITY

The value of well-timed and carefully placed advertising and publicity is too thoroughly established in the business world to admit of discussion. Care should be exercised, however, to be sure that advertising, publicity, and promotion do not move ahead of, and to the exclusion of, accurate information from the basic research program. Certain kinds of advertising and publicity deserve serious consideration, for example, such as:

1. Publicity aimed at making the owners of industries now in the state conscious of their advantages in a Tennessee location.
2. Advertising and publicity in key publications which come to the attention of those who make the locational decisions. This advertising should be aimed at (1) stating the general advantages of the state as an industrial location, (2) creating a favorable attitude on the part of industry towards the state, and (3) keeping the state's industrial possibilities before interested persons. This need for advertising the industrial opportunities in Tennessee is greater now since the private power companies have been displaced by the Tennessee Valley Authority and small publicly owned units because the large private power companies formerly spent large sums for industrial advertising which the public owned power compaines have not continued.
3. Educational tours of out-of-state industrialists through the state as well as advertising tours through the industrial North and East emphasizing Tennessee resources and products.
4. Planned exhibits at industrial fairs over the United States.

5. A permanent building for a continuous display of Tennessee resources and industries. Such a display should be located as nearly as possible in the direct path of the greatest tourist movement in the state.¹ Aside from the tremendous educational value of such a display for citizens of Tennessee, a permanent display of Tennessee's resources and industries would have valuable advertising pos-

¹Approximately 900,000 tourists visited the Great Smoky Mountains alone in 1940.

sibilities. In the author's opinion this idea should be carefully considered.

C. PROMOTION

1. Some continuing arrangement should be made so that the proper agency in Tennessee and interested agencies in local areas in the state may be able to learn about, and make contact with, industrialists in the North and East who may be considering an industrial location in the South. The four large cities now have such arrangements. A few of the smaller towns in the state intermittently send a representative to the industrial North and East to make contacts and find industrial prospects. Industrial promotion agents of the railroads frequently give such information to, and arrange contacts for, towns within their service area. But aside from the four large cities there is little organized effort to contact and sell prospective industrialists.

2. A capable industrial engineer should be obtained to help in the promotional work.

3. Arrangement should be made for furnishing advice and technical assistance to local groups and small outside industrialists in establishing industries based on small quantities of resources.

IV. PUBLIC EDUCATION

A sound and continuing program of industrial development in Tennessee must be directed toward developing an enlightened public attitude toward industry, hence the program must include ways and means of informing the general public and those concerned with local industrial development of the importance of additional industry to the state. This is necessary in the first place because the financial support, or the approval of such support, for an industrial development program must come in one form or another from the general public, and in the second place because a large part of the work of industrial promotion must be carried on, at least in the final stages, by local groups. It is also important that a workable program provide avenues through which invaluable information, experience, and opinions of local leaders and successful industrialists and business men may be effectively obtained and continuously integrated into the growing industrial development program.

It appears essential, therefore, that a comprehensive industrial development program should plan for an adequate flow of information to and from the public.

1. Through prepared material for speeches, radio programs, and news releases for the general public, civic clubs, women's clubs, etc., the public should be informed of industrial policies, technical problems and methods of promotion.
2. Conferences with community leaders should be planned to aid in the formulation of industrial policies and to inform them of the several phases of the industrial promotion work.
3. Meetings with small groups of local owners and managers of business and industrial enterprises in Tennessee should be held for the purpose of discovering what restrictive influences might be removed and what new resources and products they think may offer industrial opportunities in the area. It is possible that favorable factors for particular industries may be discovered through conferences with executives of successful industries.
4. Conferences of bankers and other financial leaders should be arranged to create a greater appreciation and understanding of the financial needs and problems of small, new enterprises. The lack of capital is certainly one factor limiting the development of industry in Tennessee. Out of conferences such as the above may come some help in the solution of the problem.
5. There should be scheduled regularly management clinics for small industrialists which may lead to greater industry through the success of present industrialists.
6. Annual conferences of a small group of technical persons employed in various phases of industrial development in the area should be provided for the purpose of discussing basic problems and techniques of industrial promotion, essential research, and industrial policies.
7. Some program should be provided for training the workers and leaders necessary for the success of an industrial development program, and, to the extent that the need exists, some consideration should be given to the obligation of the several educational institutions to incorporate programs for the training of the men who will be leaders and workers in the industry of the future. Perhaps more technical and vocational schools are needed in Tennessee.

An informational campaign and a series of meetings and conferences such as outlined above would serve the following purposes:

1. Create and maintain public understanding of, and enthusiasm for, an industrial development program in the state

2. Provide for compromise and cooperation between interested groups
3. Maintain channels for obtaining suggestions and opinions of local leaders and successful business men
4. Enable interested persons in different areas of the state to reach a common understanding of the basic industrial policies adopted by the state and to keep up with the progress of industrial development
5. Provide means of imparting knowledge of methods and techniques of industrial promotion. Such work would provide for the training of local leadership upon which must rest, in the author's opinion, a large part of the responsibility for an effective industrial development program.

The problem is not alone one of getting towns and communities interested in industrial development and active in its promotion. Equally important is the task of developing able local leadership and creating an understanding of sound policies and principles of industrial promotion. In some communities, just to cite one need for an understanding of a sound industrial development program, over-enthusiastic promotional groups need to be warned against, and possibly protected against, serious errors of direct and indirect financial over-commitments. It is not uncommon for enthusiastic groups, in their efforts to obtain a new plant, to give away in inducements more than they get in benefits. The economic and social benefits of industrial expansion must be weighed against all of its costs—direct costs in the form of subsidies and exemptions, and indirect costs in the form of added expenses imposed by necessary increases in public services. Any sound program for industrial development must provide for intelligent public information aimed at raising the level of understanding of local industrial development problems, principles and techniques, and at developing and enlisting a high quality of local leadership. The program of public information outlined above should greatly facilitate the achievement of these ends.

CHAPTER VIII

SUGGESTED ORGANIZATION FOR AN INDUSTRIAL DEVELOPMENT PROGRAM

In the last five chapters of this study evidence has been presented to show: (1) that there is a need for increased industrialization in Tennessee; (2) that competitive states are formulating and placing into operation more effective industrial development programs than now exist in Tennessee; (3) that, even though numerous agencies in Tennessee are concerned with various aspects of the problem, there are serious gaps in our present, unintegrated industrial development program; and (4) that there are several broad fields and a great number of specific ways in which a well-planned industrial development program could be effective.

Three broad courses of action are open.

1. The negative action of leaving the program of industrial development exactly as it is.
2. A program which would provide for more effective co-operation among the several organizations in the state which now are, or, could be, interested in industrial development for the purpose of determining common objectives, formulating uniform policies, and working out and executing step-by-step an integrated, long-range program.
3. The creation of some stable and continuing central organization, preferably a division within some state department, which, with the co-operation of present agencies, would formulate and carry out a program of industrial development.

The argument is so preponderantly against leaving the program of industrial development as it is that definite action is called for in setting up a more effective program. While it is true, as shown in Chapter II, that from 1899 to 1939 manufacturing in Tennessee increased more rapidly than in all but two southern states, and from 1923 to 1939 increased more rapidly than in any of the 48 states except Virginia, there are four disturbing facts which mar this picture. First, the more rapid growth of manufacturing in Tennessee than in other areas in recent years has been due almost entirely to the more or less fortuitous location of five or six large plants. Second, Tennessee is still far from being a large industrial state. Third, more than 65 of the 95 counties in the state are without any appreciable manufacturing. Fourth, much

of the state's manufacturing is of the coarser grade and consequently employs little skilled labor and pays relatively low wages. In the next decade lady luck, or, more effective selling on the part of competitive states, may place the next large plants in competitive states.

In most of the smaller towns and rural counties of Tennessee see the organization for industrial development, if any exists at all, is generally on paper only and there is little effective effort to promote the growth of industry. Little more can be expected from the independent action of small towns. In most cases, these towns can offer opportunity to but one or two small plants. The economic and social benefits to be derived from obtaining one or two such plants are too small to justify an active interest in trying to obtain such plants or the expense of maintaining an active industrial promotion agency. In most instances, these towns are too small to bear the cost of collecting and analyzing the detailed industrial data necessary to interest a prospective industrialist. It is also extremely difficult for these small towns, acting independently, to learn of desirable industrial prospects. If industrial promotion is to be effective in speeding up the development of industry in the small towns in Tennessee these towns must be aided by co-operating agencies, or some state agency, which can spread the cost of industrial development over a greater number of located plants, undertake the discovery and analysis of resources, contact industrial prospects, and aid in selling such prospects a manufacturing location in Tennessee.

In addition to this, it is important to remember that competitive southern states are stepping up their research, advertising and promotional programs. This action on the part of other states makes it increasingly serious for Tennessee to remain as indifferent as it now is toward industrial development during the next decade or so when industry is rapidly developing in the South. It is hardly necessary to point out that it will be easier for Tennessee to get her share of the expanding industry when these new plants are seeking a location in the South than it will be after the plants are once located.

There are at present in Tennessee a number of public and semi-public agencies, private groups, and individual business enterprises working more or less independently, and in too many cases competitively, on various problems of commercial and industrial development. Despite the splendid work accomplished to date and the work now in progress, on many counts, as pointed out in Chapter V, the program for the state as a whole is less effective than it might be.

For example, location of available industrial information in so many different organizations means that requests for industrial information are answered less promptly and less completely than would be possible under a more unified program. Independent work by the several agencies leads all too frequently to duplication of effort, to incomplete and partial analysis of many problems of industrial development, and, most serious of all, to the complete neglect of many other problems which thorough consideration and appreciation of state-wide interests would most certainly designate as of major importance.

Under the present set-up some industrial growth may be expected in Tennessee in the future as in the past, but there is no assurance that that growth will be either as rapid as it has been in the past or as rapid as the growth of industry in other southern states. Likewise there is no assurance that a desirable industrial structure will develop. In view of the increased activities of other states to develop industry and in view of the limitations and ineffectiveness of the present unorganized program, immediate steps should be taken to develop an integrated industrial development program in Tennessee. Toward this end two plans are suggested below.

PLAN NUMBER I.

The first plan proposed for formulating and executing a more effective program for industrial development in Tennessee is designed to achieve more effective working co-operation between the agencies now working on various aspects of the problem. If the state is not yet in a position to formulate a definite program and set up a state-financed organization, that is, if an industrial development program must depend largely upon existing budgets and personnel, then careful consideration should be given to some method of securing closer co-operation between present agencies and thus direct more of their work on industrial development toward common objectives.

Among the public and private agencies and organizations which are now concerned with some aspects of industrial development in Tennessee and which might co-operate in an integrated, state-wide program are the following:

1. The University of Tennessee
2. The Tennessee Valley Authority
3. The Tennessee State Planning Commission

4. The Tennessee Department of Conservation, including the Division of Geology
5. The chambers of commerce
6. Local industrial development committees
7. Tennessee Manufacturers' Association
8. Tennessee Bankers' Association
9. The railroads
10. Private power companies
11. The newspapers.

It should be obvious that better results could be obtained if the efforts of these various agencies were coordinated. To avoid unnecessary duplication of effort and the possibility of working at cross purposes, some means should be devised to secure agreement on fundamental policies and to establish common objectives. Some scheme of effective co-operation among existing agencies would, first, by carefully fitting together the work that is now being carried on, focus attention upon the missing parts more urgently needed in an effective industrial development program, and second, make it possible to put available personnel and facilities in the co-operating agencies to work on the more important parts of the problem. Even the consideration of the various problems of industrial development by able workers in the different agencies should improve the quality of the work carried on.

In order to give the industrial development work necessary guidance, stability and continuity under the coordinated plan, two overall integrating committees should be created. First, there should be created a state-wide Industrial Development Council, roughly, of 12 to 15 public spirited citizens consisting of successful business men, civic leaders, and administrative representatives of the several agencies which are to cooperate in the program of industrial development. Second, there should be created a separate small Technical Commission of trained persons actually engaged in some aspect of industrial research and promotion. On this Commission, one person should be appointed from each of the co-operating agencies. Such a person in addition to being a competent technical worker should be thoroughly familiar with the completed work and plans of his agency as well as its financial resources and personnel. The Industrial Development Council should serve primarily in the formulation of policies, in passing judgment upon the fundamentals and broad outlines of the industrial program, in committing needed

agencies to co-operation, and in securing public support for the program. The Technical Commission should function largely in (1) outlining the type of information required for a sound program, (2) surveying the available information, (3) planning additional research to obtain the more urgently required missing data, (4) assigning work to co-operating agencies on the basis of qualified personnel and financial resources, and (5) suggesting appropriate advertising and promotional methods. Obviously, the final objectives, policies, and program would be the joint work of both the Council and Commission. This arrangement would provide for continuing critical appraisal of research and intelligent reformulation of the industrial development program.

Under this set-up, the actual work of industrial development, that is, research, publicity, and promotion, would continue to be done by the present agencies plus such other agencies as could be interested in the program and as have facilities or personnel which they could spare. Such an integrated and coordinated industrial development program should, in the long run, achieve much better results than are being accomplished under the present set-up. It would mean working cooperatively toward common objectives in accordance with clearly stated policies. It would mean less duplication of effort and as much more attention to the more needed missing elements in our present program as the budgets and personnel of the co-operating agencies would permit. Over a period of years much more basic information on resources and industries would be made available on which to build an intelligent program. The mere process of thinking the problem through from different angles by members of the two committees would itself be a distinct gain.

Some coordinating organization such as suggested above may be the most logical first step in the development of an integrated, state-wide industrial development program in Tennessee. However, several serious weak points in this type of set-up, need to be recognized. First, there is the very real danger that the Industrial Development Council may not be strong enough and active enough to give sufficient time and thought to work out and carry through a large comprehensive industrial program. Aside from the general dangers of any large committee form of organization where interest and viewpoints are greatly diverse, such an unpaid Council, whose members are busy with their own business and problems, may through general inertia, procrastination, and a "let-George-do-it" attitude fail to give sufficient time to think the problem through and to formulate and execute a workable program. It is difficult to escape

the conclusion that the responsible job of formulating and executing a state-wide industrial development program should be someone's full-time job.

Second, operating with present budgets and personnel, it would be impossible to undertake many desirable elements of an effective industrial program, such as those suggested in the preceding chapter. There are limits to the amount of work, in addition to their regular program, which such agencies as the State Planning Commission, the Division of Geology, the Tennessee Valley Authority, The University of Tennessee, etc., can perform within the limits of their present budgets. There are definite limits to which the regular programs of these agencies can be redirected to give more time and effort than is now being given to the particular work involved in an industrial development program. Individual business enterprises, private agencies, and local groups, because of the purposes for which they were created and the source of their financial support, must obviously continue to devote their main energies to pressing individual and local problems. Likewise, several public and semi-public agencies must concern themselves chiefly with the particular problems for which they were created. Thus, while it is true that by coordinating efforts and shifting facilities and personnel as far as possible to work on an industrial development program the several agencies could accomplish much more than they are at present accomplishing, it is important to recognize that even with the best of co-operation, some elements of an effective program, perhaps very important ones, could not be undertaken under this type of set-up.

Third, such a program would be severely handicapped by lack of funds. There is no escape from the fact that an industrial development program costs money. Money will be required for research, advertising, selling and contact work. Even the effective functioning of the Industrial Development Council and Technical Commission requires a sizeable expense account. The individuals on these two groups could hardly be expected to give their own time and energies and then defray their own expenses. It is doubtful if the co-operating agencies could spare from their present budgets all the money needed for the work of an effective industrial development program.

PLAN NUMBER II

In view of the weakness of the above form of organization and because of the need for some definite and continuing agency for the formulation and execution of a program of industrial development for the State of Tennessee, it would appear to be better to set up a permanent state agency for this purpose. The most appropriate agency would be a Division of Industrial Development, most probably in the Department of Conservation. If a new division is not possible, an increase in the appropriation and expansion of personnel of some existing division in the Department of Conservation for industrial development would appear to be the next best thing.

As an effective organization for promoting industrial development in Tennessee the following general organization is proposed:

I. AN INDUSTRIAL DEVELOPMENT COUNCIL

A non-partisan, non-political council consisting of 12 to 15 industrial, financial, civic, and educational leaders should be selected by the Governor to serve without pay for the purpose of formulating broad policies, securing co-operation of necessary agencies, and selling the program to the public.

II. A TECHNICAL INDUSTRIAL DEVELOPMENT COMMISSION

A commission of 10 to 12 technical men and experts actually engaged in different phases of industrial development work in various agencies which agree to co-operate in the state-wide industrial development program should be created. This commission would provide advice and information on the more technical problems of industrial development, such as, (1) outlining the type of data required in carrying out a sound development program, (2) securing the available industrial data, (3) planning research programs to obtain the more urgently required missing data, (4) assigning particular research and promotional work to the co-operating agencies, and (5) suggesting advertising and promotional methods. The representatives of the Technical Commission should come from such agencies as The University of Tennessee, the Tennessee Valley Authority, the Tennessee State Planning Commission, the Tennessee Department of Conservation and the Division of Geology, the chambers of commerce, the Tennessee Bankers' Association, the Tennessee Manufacturers' Association, the power companies, the railroads and individual enterprises.

III. AN INDUSTRIAL DEVELOPMENT DIVISION

An Industrial Development Division should be set up, most probably in the Department of Conservation, for the purpose of promoting industry in Tennessee. An able industrial engineer should serve as head of the Division. In order to give direction and continuing stability to an integrated program and to insure unity of action and avoid duplication, the Division should have complete charge of the active program. The Division should look to the non-partisan Industrial Development Council for general objectives, policies, and judgments on the broad aspects of its program. The Division, also, should co-operate closely with the Technical Industrial Development Commission consisting of technical men from the several industrial development agencies in working out the details of the program, in effecting co-operation between the agencies, and in assigning work to the different agencies in a position to perform it.

The Division should serve as far as possible as a central file of all available industrial information and as a depository of published material on industries and resources of the types discussed in Chapter VII. In line with the suggestion there, the Division should answer all requests for industrial information or direct the inquirer to the proper agency to answer them. General state advertising, publicity, and contact work in attracting industry as well as the program of public education on industry and resources should be handled by the Division.

As far as possible, the research work under the industrial development program should be assigned to existing agencies equipped to do particular kinds of specialized research. Much of the basic research could be carried on at The University of Tennessee. The Division of Geology, the State Planning Commission and the Tennessee Valley Authority are other agencies which could assist in the research program. In order to permit existing agencies to carry on research, funds should be appropriated for the Industrial Development Division with the stipulation that part of the funds could be used to finance research on important problems assigned to the co-operating agencies. Just as an example, funds might be used from time to time to release teaching and research members of The University of Tennessee staff for special research assignments. Similarly, some funds might be used to grant fellowships to graduate students at the University to do research on some promising problem in the field of industrial development under the direction of some member of the University staff. Funds should be provided, not only for advertising and the publication of the state book containing essential

industrial facts, but also for the publication of technical pamphlets containing reports on research in particular resources and for the publication of industrial prospectuses.

The work of the Division would necessarily have to be confined to research, general publicity, and information about the State's industries, resources and industrial opportunities, and preliminary contact work. Advertising of a specific region within the state and most of the job of the actual selling of a prospective industrialist on a given location would still have to be done by the interested localities. The competitive efforts of different communities to get the same industry must be recognized and provided for in any state-wide industrial development program. Otherwise there would probably be a fight over some plant, which would end effective co-operation on the part of the competitive communities and which would probably disrupt the whole program. The Division, however, could aid the individual communities in their selling job by providing them with prospects, with more accurate information on resources, and with a better understanding of industrial policies and promotional techniques.

In addition to the help of the Technical Industrial Development Commission, it would doubtless prove valuable to have an annual meeting, perhaps under the auspices of The University of Tennessee, of the technical persons and research specialists from the University, the Tennessee Valley Authority, the several divisions and departments of the state government, chambers of commerce, power companies and railroads. An annual meeting of these persons for the presentation of papers and round table discussions on important technical problems of industrial development in Tennessee should insure more careful and thorough consideration of many of the problems of industrial development, suggest important problems for further work, secure considerable evaluation of industrial policy, and serve as an integrating device for the work actually carried on by these specialists.

One other point is worth consideration. Many problems of industrial development in Tennessee are South-wide problems. A number of factors limiting industrial development apply with more or less force to the South as a whole; consequently, South-wide efforts should be made to remove or reduce these limiting forces. Because of this fact, the Industrial Development Division should make provisions for establishing working relationships with parallel efforts in other southern states. In this way, Tennessee could gain from pooling its thinking with constructive thinking along parallel lines in

neighboring states. As a part of this South-wide attack on the problem, for example, it would appear advisable to have some definite organizational arrangement for co-operation between the Tennessee industrial development program and the working organization created by the Southern Governors' Conference.

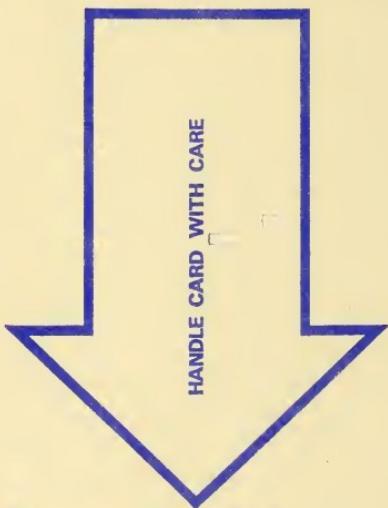
CONCLUSION

Through some such organization as proposed above, the collective thinking of the business men and civic leaders as well as those in government, research and educational institutions could be pooled in the formulation and execution of a practical program of industrial development in line with fundamental objectives. Without some such organization, experience has shown that those interested in commercial development frequently miss the opportunity of basing their actions upon a common understanding of fundamentals. Furthermore, it is extremely doubtful if any single public or private agency can think through the complicated and interrelated problems involved in a program for industrial development, carry out the research, and interpret its findings for public guidance. This plan would mean much closer and more effective co-operation among the several agencies now working on various aspects of the problem in Tennessee. By reducing duplication of effort and providing for effective utilization of time, it would give better results for the same time and money now spent on industrial development. Such a program would effect further savings by making use of present technical staffs, equipment, and research facilities. Through the Industrial Development Council and the Technical Industrial Development Commission and through the several channels leading up to these two groups and on through them to the Industrial Development Division, the development program would profit from the accumulated knowledge of industries, resources, industrial problems and industrial development experiences and techniques possessed by business and civic leaders as well as by experts in the field of industrial research and promotion.

It is difficult to see how either of the plans proposed above for the co-operative formulation and execution of a state-wide industrial development program could involve any jurisdictional controversy between the several agencies or conflicts between local groups. It would not displace or duplicate the work of any existing agency, but would co-operate with and coordinate the efforts of these agencies. Such a plan simply recognizes that the task of securing all the factual information necessary for the solution of many of our industrial

problems and the formulation of a workable commercial and industrial program is too great to be handled with sufficient speed and thoroughness by any one of the existing agencies acting singly with present personnel and financial resources. Such apportioning of the work among the several agencies, as suggested above, would speed up its completion and reduce waste and duplication, and should increase the quality of the work done by securing analysis of important problems by individuals and organizations particularly qualified to handle these specialized problems as well as by providing for the careful consideration of these problems from different view points by the various groups. Equally important, a carefully planned co-operative program would greatly reduce the number of gaps in the industrial research program, which is essential to intelligent industrial planning and development in Tennessee.

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